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PRUNING OF FRUIT TREES.

By T. R. Sim, Conservator of Forests.

A CORRESPONDENT in this issue of the *Agricultural Journal* takes exception to Mr. Fred. Symons' statement that pruning is a debateable subject, and quotes American opinion as being entirely in favour of pruning. That, however, only shows one side of the subject, while the fact that a very large proportion of the English orchards are still unpruned shows that there are believers in the opposite view, whether they have reasonable grounds or not for such a belief.

The position may be put thus ;—A fruit tree, like any other animate object, naturally aims at reproducing itself, or rather its kind, and, in furtherance of that object, the production of seed is its chief end in life. To produce seeds the production of fruit is necessary, and with reasonable feeding and cultivation that fruit can be of very high quality, irrespective of pruning. A fruit tree in its natural condition does not, however, begin to fruit at an early age, it rather devotes its early vigour to growing into what is its natural size, and then, on reaching maturity, the fruting commences in earnest. Fruits may be produced earlier, but these indicate precocity in the kind ; the natural sequence in most fruit trees enjoying vigorous health being growth first and fruit afterwards. That being so, the production of a full crop from an unpruned tree usually occurs high up among the top branches, the fruiting buds in almost all fruit trees being produced on the branches most exposed to open air, which naturally are the highest and most spreading ones. These exposed branches often produce fruit-buds along their whole lengths, but if there is sap enough, hose near the points flower first and secure fertiliation, and the rest then become abortive. The result is that on unpruned trees of vigorous habit the fruits are produced at the points of rather long and fully exposed branches, barely fit to support them; they dangle about in the wind, and when mature are in inaccesihle positions, and have to fall or be knocked to the ground, or he gathered from the trees by the use of long ladders. In suitable surrounding, however, they often get beyond the reach of ladders, and I have in mind many fine fruit trees, especially pears, in Cradock and other Karroo towns, which carry grand crops of good fruit 50 to 70 feet above the ground. The soil there is rich, deep alluvial, and is irrigated when necessary.

A pruned tree, on the other hand, is an artificial production, in which Nature is subdued, kept in check, and regulated only in accordance with the skill and persistence of the operator. The extent and object of the pruning may vary considerably, but usually the object is two-fold :—

1. To produce, in the first case, and afterwards keep in the same condition, a tree from which the fruit can be gathered direct into the basket and sent to market or table without a bruise.

2. To change the whole nature of the tree from one of wood production to one of fruit production ; that is, to take the vegetative vigor out of it and to produce an unnatural and precocious tendency to fruit.

Now, abundant fruiting in a tree, whether pruned or not, usually has the effect of further checking the vegetative vigour and increasing the tendency to become reproductive. Any other circumstance which in a similar manner checks the wood growth usually hastens maturity and increases the fruit crop, such as, for instance, the root-pruning of an over-luxuriant tree, chopping incisions in the bark, or allowing rats or sheep to gnaw part of the bark away, and it is a common practice to use stocks of the less vigorous kinds on which to graft the stronger growers, and thereby produce a similar check.

Mr. Symons mentions that Nature supplies the necessary check in the case, when he says " The

climate here is dry, and the trees do not make anything like the wood which those nearer the coast do." The same thing occurs in many places, especially in the drier parts of Cape Colony, where, if irrigation is irregular, or not practised at all, the crops of good fruits are enormous from trees which in spring are too dried out to send sap to the points of the branches, and consequently fruit on spurs lower down. In such case, too, fewer twigs are produced, and consequently abundant air is admitted to all parts of the tree. It will be seen then that Nature in some cases prunes or checks to a considerable degree, and each orchardist has to study his own conditions and his own kinds in deciding whether or not he will prune. (All this, of course, refers to deciduous fruit trees only, and does not apply to citrus or other evergreen kinds, in which the treatment is different). But "pruning" is a wide term and is understood differently by different growers.

(1) The most advanced orchardists believe in a totally artificial tree, which is made, and continues to be such, simply through the unremitting attention paid to it in the matter of pruning, though much of that pruning is done with the thumb nail rather than with the knife, *i.e.*, summer regulation of the young green shoots, to such an extent as to fully mature, by free contact with fresh air every shoot that is left.

(2) Others, again, believe in pruning scientifically only for the first three or four years, that is, until the tree has assumed the desired shape, and there, after doing only a limited amount of pruning, especially if, as often happens, Nature assists by means of drought, hail, or other causes.

(3) Others again do not prune at all when the trees are young, but in after years saw out heavy branches and thereby admit air.

Of these various methods the first is distinctly the most profitable where climatic and soil conditions are altogether favourable, and where skilled labour is always obtainable at reasonable cost. The six Europeans of Mr. Symons could not do everything in 30 acres of orchard on these lines, and it then comes to be a debatable subject whether additional skilled labour will pay better than by adopting the second method, in which dwarfing stocks and natural checks do a good deal of the work after the first few years. In commercial orchard work skilled pruning usually pays, but it is no uncommon case also to find, taking all the surrounding conditions and circumstances into consideration, that skilled abstention from pruning pays better than unskilled pruning. The third method suits the man who grows his firewood in his apple trees, at the expense of his crop, and who does not have sufficient skill or sufficient energy to do anything better. He is satisfied with second-rate fruit, in small quantity, and uses six acres to produce what one acre should do, and then gets lowest prices. Still it is the method used almost exclusively in all the cider and jam producing orchards in England and New England; it is a low-grade method, producing inferior fruit suitable only for low-grade industries and often unsuitable for market, but it pays the man whose low-grade ability would oust him altogether from the production of first-class market fruit.

For the production of first-rate market fruit one or other of the first two methods must be used, surrounding circumstances deciding in each case which it has to be, but in a general way it may be said that scientific pruning is the more successful coastward, or on low alluvial valleys, while on high and fairly dry ridges and where labour is unobtainable the second method makes a fairly good substitute.

I trust no one will construe this into an excuse for slovenly negligence of necessary pruning; I also trust that your correspondent will see that there is room for debate as to how much pruning should be done, and in some places whether any at all should be done beyond producing the form of the tree at the start.

It is evident that market fruit cannot be successfully gathered from trees 70 feet high, but it is also as evident that where Nature and kind of stock keep the trees reasonably dwarf and productive of full crops of good fruit upon stem-spurs, very little, if any, pruning is wanted.—*Natal Agricultural Journal.*

PREPARING "PARA RUBBER" IN CEYLON.

"To the Editor of the India Rubber World."

I have much pleasure in complying with your request for full particulars as to the method of collecting and coagulating rubber, up to the time of despatch for market, employed on the Kepitigalla estate [at Matale, Ceylon]. After considerable experience, with several methods employed in other parts of the globe, I think there is none other equal to the one adopted in Ceylon, and if this were used in other countries it certainly would mean a rise in price of at least 6 pence a pound for rubber.

The tool employed for tapping rubber trees on this estate is not equalled by any other in use, for its clean cut and absolutely safe incision, the tree not being damaged in the least. The shape is indicated by an accompanying cut.

Tool for incising Rubber Tree.

In practice both hands are used to hold the wooden handle. Placing the corner of the angle *B* at the start of the cut, the tool is pulled downward two or three times in the same incision, care being taken not to cut into the wood. Though this may seem difficult at the beginning, a little practice will soon make the work easy. After two cuts have been made, converging in the shape of the letter V, another labourer places a small tin cup at the lower point of the V. Care should be taken that at this point the two cuts do not run together, but that a small space be left between them. The incisions should be about 4 inches long, with a space of at least 3 inches between them at the top. The same space (3 inches) should be left before beginning the next pair of incisions in going around the tree. This is absolutely necessary, for if the cuts join, the flow of sap to the tree will cease, and the tree will die. The first series of incisions should be made as far up the tree as a person standing on the ground can reach. Every second day a new band of incisions may be made lower down, as indicated in the drawing. About twenty rings or bands of incisions can be made around a tree within a distance of six feet from the ground. About five V shaped incisions may be made around a tree 40 inches in circumfrence.

Incision with tin attached.

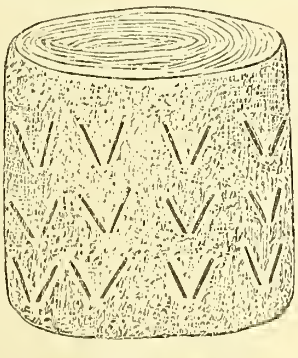
The tin cup used are about two inches in diameter and two in depth. As the *latex* flows immediately after the cuts are made, the tapper's assistant at once presses the edge of a tin cup into the bark, no nails or putty or wax being required to hold it in place. A third labourer follows with a pail of water, putting a small quantity into each tin to prevent the *latex* from coagulating—a very necessary precaution, especially on a hot day. The tapping as above described is done early in the morning, and in this

way three men can place 400 cups in a half day, and attend to the rubber obtained.

The contents of all the tins are stirred once or oftener, besides which the laborers must see to it that none of them overflow. Work is started about 6 A.M. and by 11 A.M. all the tins have been taken off and emptied into a pail. While one cooly carries the pail of *latex* to the factory, the others wash out the tins and at once replace them under the same cuts. The tins are again emptied, in the same manner, at 3 P.M., which completes the yield of *latex* from a given set of incision. In the meantime, after the tins are washed, the coolies pick off any rubber that may have dried in the wounds made on the last round, which is called scrap. So much for the collection of the *latex*; we come now to the curing of the rubber, which is simpler still.

As the *latex* is brought to the factory in a liquid state (mixed with water, which is necessary to enable the *latex* to go through the process by which the rubber is preserved), it is strained through a very fine wire mesh—a milk strainer, for example—into shallow tin pans, 7 inches square by two inches in depth, in which it is left to stand overnight. By morning the rubber will have coagulated naturally, without the use of any chemicals, and most of the water will have become separated from the pure rubber. The lump of rubber is then taken out and placed on a table and gently pressed with the hand to exclude the water, after which a wooden roller worked by hand is passed over it, back and forth, until more of the water has been expressed, leaving a flat sheet of rubber about 8 inches square and ⅜ inch thick. The lumps of rubber thus made are placed on caned trays or frames about 6 × 3 feet, caned like the bottom of a chair, though not so closely woven. After the rubber sheets have remained on the trays for four or five days, they are hung to dry on wires stretched across the room, after which they will require frequent attention to prevent mildew, a man being detailed to rub off all mildew spots with a rag. About two months are required for the rubber to become thoroughly dry and free from white patches. So long as these patches appear, it is an indication of dampness and further drying will be required.

When thoroughly dry the sheets of rubber are ready for shipment, and are packed in boxes about 18 by 18 inches square and 8 inches deep—usually about 50 pounds to a box. The secret of the high prices obtained for rubber from Ceylon lies (1) in the straining of the *latex*, by which every particle of dirt is kept out, and (2) in the thinness of the sheets of rubber, which permit any one to see that they are free from dirt, sand, etc. No chemicals are used, and no heating is required. On the whole this is the simplest method, when one knows how that could possibly be adopted. The rubber from most countries now comes to market in large pieces, and can conceal any amount of impurity, while in other cases the *latex* is allowed to dry on the stem of the tree and when pulled off contains a large percentage of bark and dirt, which mean loss to the buyer and extra work in the factory.



Relative Position of series of Incisions.

The last sales of rubber from this estate have brought probably the highest average price of any rubber sold in the world during the same period, and this is saying a good deal, namely: an average of 3*s.* 11*d.* per pound, The total output for Ceylon for 1903 will be about ten tons, of which this estate will send two tons.

FRANCIS J. HOLLOWAY.

Kepitigalla Estate, Matale, Ceylon,
January 8, 1903.

KEPITIGALLA ESTATES AND ITS PRODUCT.

The Kepitigalla Estate, situated in the Central province of Ceylon, in the valley of the Matale river, 8 miles from Matale town. THE INDIA RUBBER WORLD of December 1, 1902 (page 80) contained some details regarding the extent of the rubber tapping on this estate, to August 1902 by the manager Mr. Holloway. It was stated at the time that the trees were planted at the rate of 150 per acre, at a distance which fitted them for shading cacao. His experience to that date pointed to one hundredweight (112 pounds) as the average yield per acre, based upon a result of tapping about 4,000 trees. He gave then also an estimate of the cost of preparing rubber and forwarding it to the seacoast, which equalled $17 per acre. At 3*s.* 11*d.* per pound, the product of an acre would realize $106.73 which, after deducting freight to London and brokers' commissions, should allow a very good profit.

Mr. H. G. Tippett managing Director of the Liverpool Rubber Co., Limited, who has used some of the Ceylon rubber, says in regard to it, in a letter to THE INDIA RUBBER WORLD:

"The weight of the cases at present is irregular, roughly about 100 to 130 pounds, but they will probably settle down as the supply becomes regular to 1 cwt. 112 (pounds) cases. The rubber is excellent—made up in round pancakes (just like buckwheat cakes), about ½ inch thick, and 6 inches diameter; semi-translucent—absolutely clean and dry—loss about 1 per cent. Quality equal to finest (Bolivian Para."—*India Rubber World.*

QAT OR ARAB TEA.

[*Special for Indian Planting and Gardening.*]

A specimen of *Qat*, usually referred to in botanical works as *Catha edulis*, is now in flower in the Royal Botanic Garden, Calcutta, to which it was introduced somewhat accidentally in 1892.

The genus *Catha* belongs to the family of *Celastrineæ* or "Spindle-trees," and is at present limited so as to include only this one species, *Qat*; a shrub found in a wild state in Abyssinia, where it is said to be also cultivated. It is likewise found in Arabia, and according to Forskael, who first described the plant, the Arabs cultivate it along with *Coffee.* They eat the green leaves, he tells us, because they attribute to them the property of enabling a man to do 'sentry go' all night without wishing to sleep. He says, too, that they look on it as an antidote to plague, declaring that anyone wearing a sprig of this plant may go without risk among the infected, and believing that, wherever this shrub is planted, the plague cannot come. But Forskael adds that the taste of the leaves does not appear to indicate such virtues. Botta found that in Yemen just as much importance is attached to the cultivation of *Qat* as to that of *Coffee* itself. He speaks of wild as well as cultivated plants, but it is not at all clear from his account whether these wild plants are indigenous or only escaped and naturalised ones. It is true, as De Candolle says, that the interior of Arabia is nearly unknown to botanists; this makes it somewhat uncertain what plants are, and what are not indigenous to the Arab Peninsula. But as regards *Coffee*, it is almost certain, in spite of its popular

association with Mocha, and in spite of its being named *Coffea arabica*, that the plant is a native of the African side of the Red Sea, and is only an introduced plant in Arabia. De Candolle is therefore (*Origin of Cultivated Plants*) inclined to think that probably the two plants, *Qat* and *Coffee*, were introduced together from Abyssinia; and Boisser, who made a study of the plants of this region to a great extent the work of his life, clearly did not accept *Qat* as a native of Arabia, because he does not include the species in his celebrated *Flora Orientalis*.

Hochstetter in *Flora*, for 1841, says that in Abyssina an infusion just like *Tea* is made from the leaves; but a correspondent of the *Gardeners' Chronicle*, for 1843, writing from Yaush in Shoa, November 1842, says very definitely that the Abyssinians only use it in building their houses mostly structures of wattle and daub, for which the thin stems and branches of this shrub must be very well adapted. No other use, this writer says, is made of the plant except by the Musalman merchants, who chew the leaves in order to prevent sleep. These merchants, he adds, have transported the plant into the country of the Yeajon Gallas, where it is largely grown, but is nevertheless not used as an article of trade. In Arabia on the contrary (*Treasury of Botany*) *Qat* forms a considerable article of commerce, large quantities, of twigs being annually brought to Aden from the interior of the Peninsula; some of these, according to Watt, even reach Bombay. For export the twigs are made up into compact bundles, varying in size according to quality; the best kind comes in bundles, 12-15 inches long by 3 inches wide, consisting of about 40 twigs neatly bound together by strips of fibrous bark or tightly packed in palm-leaves. A thousand camel-loads of these bundles, according to the *Gardeners' Chronicle* for 1890, reach Aden every year.

The plant seems, as a matter of fact, to be used chiefly as a stimulant and a food-accessory, just as *Coffee*, *Tea*, *Mate*, and *Coca* are. Of the four, *Qat* appears most to resemble *Coca* in its effects. It enables the user, so it is said, to undergo prolonged muscular exertion without fatigue or to sustain hunger without inconvenience. The use of the leaves which besides being chewed like those of *Coca*, fresh or dried, are also infused like *Tea*, induces a feeling of exhilaration and excites cheerfulness of spirits; for this reason, according to Botta, and to Deflers, the leaves are liberally distributed at religious rites, domestic festivities, and visits of ceremony; Botta speaks of one sheik, obliged to receive many callers who had to spend, on *Qat* alone, as much as 100 francs a day! The fresh leaves, which taste to the writer's mind, very like the leaves of *Coca* are said by Botta to be sometimes very intoxicating; the writer cannot corroborate this from his own experience. It is true that Botta credits this quality to the leaves of wild plants. In the *Gardeners' Choronicle* for 1843, a woodcut is given of a twig, said to be from a specimen gathered by Bové. This woodcut is used again by Lindley in his *Vegetable Kingdom;* it will be referred to critically below. In connection with this drawing it is remarked that leaves gathered when the plant is three years old are sold as *Qat mubarreh* or "inferior;" a year later young shoots are gathered and fetch a higher price. The Abyssinian correspondent also refers to two varieties, but in a somewhat different way; he calls them the "red" and the "white," distinguished by the colour of the wood and young leaves, and (though of this he is not quite certain) the flowers also. To this question of different kinds, too, further reference will be made.

When it is a plant of economic importance that is under discussion, the writer's experience commonly is that there is some confusion as regards its name; *Qat* is no exception to this rule. The name usually given to the plant is *Catha edulis;* the authority quoted is Forskael, *Flor. Aegypt. Arab.* p. 63 (1775). The first writer to make this citation is Vahl, *Symbol.* i. p. 21 (1790), who himself named the plant *Celastrus edulis*. The citation can only be explained as a *lapsus calami*, because in the place quoted Forskael does not use the name *Catha edulis*. He described the plant rather more carefully than most subsequent writers have done, but omitted to name it; so far as the writer can ascertain, Forskael never did publish a name for the species. Vahl's inexact citation has, however, been usually accepted as accurate, but it is not clear if *Catha edulis* be the true name of the plant. It certainly is not on Forskael's authority that it can be taken up if it be the true name. This is, however, a trifling matter. More important is the question as to the arrangement of its leaves and branches.

Forskael's account, which is rather more careful than some subsequent ones, states.—"Branches alternate, axillary; branchlets green, annual articulate; leaves opposite, on the large branches alternate." Vahl, copying from Forskael, but varying the expressions, says:—"Branches alternate; branchlets articulate, alternate; leaves alternate, on the branchlets opposite." Don (*Gen. Syst. Gard.* 1832) says briefly: —"Leaves opposite and alternate." Hochstetter *Flora*, 1841) says:—Leaves opposite." Lindley's figure in the *Gardeners' Chronicle* for 1843 and in his *Vegetable Kingdom* (1853) shows a pair of opposite leaves *with flowers in their axils*, at the base of the twig and two alternate leaves *without flowers* above. *The Genera Plantarum* (1862), apparently following Hochstetter says:—"Leaves opposite." The *Treasury of Botany* (1866) says:—"Leaves opposite on some branches and alternate on others;" Oliver (*Flor. Trop. Afr.*, 1868) says:—" Leaves opposite; or alternate on the leafy shoots." In the *Histoire des plantes* (1875) Baillon says: —Leaves usually opposite." Finally Loesener, the last important author who has dealt with *Qat*, says (*Engler's Naturlich-Pflanzenfam*, 1896):—"Leaves opposite on fertile twigs, often alternate on the sterile." Forskael's account is thus the fullest, and it may be added is also the most accurate on the point; that even it is not clear we can see from the indecision and the discrepancies of subsequent writers. It may therefore not be superfluous to explain exactly what does happen and what the conditions, as exhibited by plants that the writer has watched for eleven years, really are.

In 1892 some twigs were sent from Hodeida for identification; they were specimens of a kind very familiar to the Editor of *Indian Planting and Gardening* and to the writer, for they had neither flowers nor fruits, and had been placed in a letter without having been previously dried. They reached their destination a mass of pulp so far as the leaves were concerned, but as there seemed to be some vitality in the twigs, an attempt was made to strike them as cuttings. Of the twigs that had, as their leaf-scars showed, borne opposite leaves none survived; of those that had borne alternate leaves a fair proportion held. In, as was then supposed, (though now it is clear this was not exactly what happened, the axils of these leaves small buds broke and gave rise to nearly vertical shoots with red bark and alternate leaves. These shoots gave the plant a fastigiate character; they increased in length for two seasons, retaining nearly all their leaves but not branching. In their third season the axils of the lowest leaves, corresponding to the first season's growth, gave origin to branchlets quite different in appearance from the branches produced by the original cutting. Instead of growing fastigiately these branchlets spread horizontally; instead of having alternate they had opposite leaves, slightly smaller and distinctly more cuneate at the base than the others, with moreover only a faintly red petiole and base of mid-rib, whereas the alternate leaves had red petioles, mid ribs red throughout, and reddish secondary nerves beneath. The following season the set of leaves corresponding to the next succeeding season of growth in turn gave out more horizontal opposite-leaved branchlets, while the horizontal branchlets of the preceding season increased

in length. It was observed, however, that these branchlets were now unlike the fastigiate and alternate-leaved branches in other respects. Instead of being decidedly thicker at their bases and tapering upwards like the latter, the opposite-leaved horizontal branchlets remained of uniform thickness throughout; they were moreover rather markedly swollen at the nodes, which is not the case with the alternate-leaved branches; most marked difference, perhaps, of all, the redness of the youngest part of the shoot, instead of deepening with age into a rusty brown, as happens with the alternate-leaved branches, passed in these opposite-leaved branchlets first into green and ultimately into greyish white. After an interval of two more seasons a striking occurrence took place. Just above the oldest set of horizontal branchlets, now in their fourth season of growth, a new series of buds appeared which developed into a new set of branches, so that now in each axil were to be found two superposed axillary twigs. But every one of these new and accessory branches differed from the first from its subjacent opposite-leaved companion branchlet in having dark-red bark, with alternate and red-veined leaves, in being thicker at the base than it is above, and in growing fastigiately instead of spreading horizontally. This second set of branches was in fact a repetition of the system of branches that appeared originally in the cuttings.

Since then the same phenomena have repeated themselves, the branches last described have developed their own primary series of horizontal branchlets and are now beginning to emit their accessory series of fastigiate branches. Moreover, the primary horizontal branchlets of the second series are now in full flower and are setting fruits.

While the cycle described is the normal sequence of events it must not be supposed that it exhibits absolute regularity. To begin with, every leaf on a vertical alternate-leaved branch does not have a horizontal, opposite-leaved branchlet in its axil; most of them have, but not all. Again, by no means does every branchlet with opposite leaves become accompanied by a superposed vertical alternate-leaved branch. Not infrequently these opposite-leaved branchlets die and are shed before the corresponding vertical alternate-leaved branch has appeared. The buds of these alternate-leaved vertical branches, in spite of their greater vigour of growth when they do ultimately burst, often never show at all or lie long latent, and appear low down on the stem, long after the leaves and the horizontal branchlets that correspond have disappeared. But where a vertical alternate-leaved branch does this break, it is at once evident that just below its position there have formerly been a horizontal branchlet and a leaf. Again, though it is usual for only one vertical branch to accompany a horizontal branchlet, now and then two or even more than two branches arise at the same point. What, however, is certain in the case of *Qat* is that there are two branching moods, and that these moods alternate. Leafy branches of deliquescent type with alternate-leaves bear first a set of axillary branchlets of excurrent type with opposite-leaves. The latter are comparatively short lived and do not again branch vegetatively but ultimately bear in their axils cymes of flowers. Later the leafy alternate-leaved erect branches produce, just above the branchlets a new series of branches which repeat the erect habit and the alternate leaves of the branches that bear them and in turn go through the same cycle.

The facts of the case explain all the divergent accounts of the authors who have been cited. In Herbaria only flowering or fruting specimens as a rule find a place, hence as a rule only opposite-leaved twigs occur in collections. This explains the statements of Hochstetter and of the *Genera Plantarum*. The writers who say "leaves opposite or alternate" are more accurate no doubt, but they leave the true condition entirely unexplained. In the case of Lindley's figure it can only be supposed that his artist had twigs of both kinds before him, and not grasping the significance of their differences had, to save space, combined their attributes. Loesener is much more nearly exact, and when he says "leaves on sterile branches often alternate," he is no doubt accurate, since all the opposite-leaved branchlets do not have flowers. He does not, however, bring out the fact that the branchlets with opposite leaves so far as we know, are the only ones that ever do bear flowers and fruits. Forskael's account, in the light of actual facts, now becomes clear. His large branches are the branches of the alternate leaved deliquescent type; his green branchlets are those of the opposite-leaved excurrent type. The expression 'articulate' is not strictly accurate; these branchlets are swollen at the nodes it is true, but they are not jointed; nor is he accurate when he speaks of them as annual, for though they do appear as a new crop each year, and though they are short-lived as compared with the erect branches, they persist as a rule, for more than one season. Some of them in the case of a plant under observation at the Royal Botanic Garden, have persisted for 5 or 6 years. But when a branch of the erect alternate-leaved type appears just above a branchlet of the opposite-leaved type it grows so much more vigorously and rapidly than its companion that it seems to rob the latter of its nourishment, with the result that all save the leaves of its newest growth drop off and in a year or two it makes no more growth, loses the remaining leaves, dies and sooner or later snaps off close to the branch from which it originated.

In what has gone before, the writer has endeavoured to bring together all that has been recorded, and to state what he has been able to observe with regard to *Qat*. There are, however, not a few points that are still obscure; these it may be well to briefly review.

It has been explained that the writer has failed to get cuttings from the opposite-leaved branchlets to hold. It would be interesting to try in some locality more suitable to the plant than the Gangetic delta, whether this experience holds good elsewhere, and whether it is only from branches of the alternate-leaved type that cuttings can be struck. Again, in cuttings from branches with alternate leaves it was found that the buds which broke were all buds that gave rise to branches with erect habit and alternate leaves. They were supposed by the writer to be axillary; he now knows that they were really supra-axillary and that in theory a bud of the excurrent opposite-leaved type must have existed below each, but never became developed. No seeds have yet been obtained at Calcutta; those who have seeds at their command might observe what happens with seedlings, and record whether the first series of branches that appear on these are of the normal primary excurrent type, or whether with seedlings, as with cuttings, the first series of primary excurrent opposite-leaved branchlets is suppressed.

Then as to the name. Some writers give Qâf or Kâf (*Bove*), Kafta (*Treasury of Botany*), or Cafter (*Watt*). In the *Gardeners' Chronicle* for 1843 Lindley publishes the explanation suggested by a scholary friend that the varient *Kaf* for *Kat* is merely a mistransliteration. It very probably is, but the point has not yet been authoritatively settled. Nor, to come to the scientific nomenclature, is it certain that *Catha edulis* is the correct appellation; whatever the name may be authority universally cited for it is erroneous.

Then, is the plant wild in Arabia? Botta, we have seen, speaks of the plant as wild in Yemen. The matter is doubtful. The question whether *Coffee* is or is not wild in Arabia is one that every traveller in the Peninsula hopes to settle. The two matters hang together, and as the two plants are cultivated side by side both problems will doubtless receive the same attention.

That the reputation the plant enjoys as a plague-preventive is an item of folk-lore, and no more is sufficiently clear from what Forskael says, but do the fresh leaves, as Botta states, ever have intoxicant qualities? As the property is associated especially with the leaves of wild plants, the absence of the property from the leaves of plants grown at Calcutta proves nothing. But the statement gives an added interest to the question whether the *Qat* is truly wild in Arabia, whence the property is reported; its accuracy should admit of being readily tested in Abyssinia, where the species is unquestionably wild. That the ordinary commercial *Qat* is not deemed intoxicant, seems fairly clear from the statement made in the *Treasury of Botany* that certain Arabs were induced to assume towards the species the attitude that the Wahabi sect assume towards *Tobacco* and, on account of its stimulant property, to class *Qat* among those intoxicants whose use is forbidden by the Koran. A synod consequently was convened to consider the point, and after due deliberation, having regard to the fact that it only caused hilarity and conduced to good humour, but neither impaired health nor interfered with attention to the duties of religion, this synod decreed that the use of *Qat* is lawful.

Forskael, as we have seen, gently throws a doubt on the potency claimed for *Qat* by the Arabs; Lindley (*Gardeners' Chronicle* 1843), says:—" We have tried the quality of the infusion in hot water, but are unable to say anything in its favour." Were the writer to judge from the results of his own trials, he must consider the stimulant properties even of fresh leaves just as doubtful as their narcotic ones. Possibly, however, Forskael, Lindley, and the writer have not gone on long enough!

The *Qat mubarreh* or "inferior" *Qat* of the *Gardeners' Chronicle* is clearly the leaves of alternate-leaved three-year-old young stems, but whether the young shoots gathered in the fourth year are alternate-leaved branches or opposite-leaved branchlets we do not know. Theoretically we should expect them to be the latter; we know, however, that with cuttings the opposite-leaved branchlets remain suppressed and alternate-leaved branches at once arise, and it may be that with seedlings this is also the case. Anyhow the matter, which might be settled by a simple observation in Abyssinia or Arabia, has never received the attention it demands. That the two kinds of *Qat*, the 'red' and the 'white,' referred to by Lindley's Abyssinian correspondent, are simply twigs from young alternate-leaved and from opposite-leaved shoots respectively, will be obvious to those who have studied the branch-system of the plant. Unfortunately our certainty as to this throws no light on the problem as to whether good *Qat* has leaves opposite or alternate, because no reference has been made to the relative quality the "red" and the "white" kinds.

De Candolle remarks on the fact that the use of *Qat* has not spread eastward to Beluchistan and India, where intoxicants are so much in request, in spite of the fact that the plant is likely to thrive well enough in both countries. The first question of course is as to whether *Qat* be really an intoxicant at all. Apart from this, however, a sufficient reason possibly is that the people of those parts of Beluchistan, Persia or India, where *Qat* will freely grow, did not require to trouble about so relatively innocent an article when they had at hand such potent intoxicants in *Hyoscyamus*, *Cannabis* and the like.

The *Gardeners' Chronicle* for 1890 speaks of *Qat* as a plant that it might be advisable to introduce into various British Colonies and Dependencies. In the writer's opinion *Qat* is a plant that deserves further investigation, but something more definite than we have yet been told must be known before its introduction as other than a curiosity need be advocated.

D. PRAIN.

As a supplement to the interesting article on Arab Tea, written by Major D. Prain, in last week's *Indian Planting and Gardening*, it would be well to give the results of the chemical investigations of this plant.

As the leaves are employed as a stimulant, it was naturally supposed that, like coffee, tea, and kola, the plant contained caffeine, but three independent observers searched for this alkaloid with negative results. Dr. Attfield in 1865, Professor C. Schloremmer in 1884, and Dr. Paul in 1887 were unable to find indications of caffeine. Dr. Paul attributed the action of the drug to an etherial oil or some other aromatic or volatile constituents. Professor Schlorermer isolated from the leaves a small quantity of a kind of sugar which was apparently mannite.

A long paper was written in 1887 on the history and composition of *Catha edulis* by Professor Flückiger and Gerock, and the authors, as the result of a chemical investigation, detected the presence of an alkaloid existing in small quantity which they named "katine."

In 1894 the physiological and therapeutic properties of Catha were studied by M. E. Collin of Paris. He found that the drug has a powerful stimulating action on the nervous system, banishing sleep, restoring the physical forces and sustaining muscular activity.

In 1899 the leaves were again submitted to analysis to ascertain their proximate constituents, and Professor Schaer of Strasburg communicated the results to the Convention of German Naturalists and Physicians. The principal constituents were found to be—1. Physiologically active alkaloid, cathine, which forms rhombic crystals. 2. Large quantities caoutchouc. 3. A tannin, closely related to that of tea leaves. 4 Mannite. 5. Small quantities of an oxygenated volatile oil. From the seeds about 50 per cent of fixed oil, composed of glycerin-esters was obtained.

Dr. Albert Beitter, in 1901, found the alkaloid to exist in very small amount: the leaves from Aden yielding only 0·076 per cent., while those from Harrar yielded only one half as much. The alkaloid is associated with a new caoutchouc substance, which softens at 50 deg C. and melts at 120 deg. C.; and the composition is represented by the formula $C_{10}H_{17}O$.

These particulars may be of interest to those who wish to know what are the constituents of Arab Tea. The plants grows well at Poona, and could no doubt be easily cultivated elsewhere in India. Dr. Zwemir, of Arabia, who visited Calcutta last December informed me that *Catha edulis* was one of the most useful drugs of the country and formed an important article of trade.

D. HOOPER.

MEXICO'S VEGETABLE PRODUCTS.

MOST OF THE KNOWN PLANTS AND TREES OF THE WORLD FOUND IN THE REPUBLIC.

(*Concluded from page 666.*)

Flor de Noche Buena, Euphorbia pulcherrima, Euphorbiaceas: A peculiar red Mexican flower, medicinal.

Flor de San Juan, Bouvardia longiflora, Rubiaceas: Beautiful native flower of the valley of Mexico, used for perfume.

Floripondio, Brugmansia suaveolens and bicolor, Solanaceas; Large white or coloured flower.

Fresno, ash, Fraxinus juglandifolia, Oleaceas: Especially on Central Plateau.

Frijol, Mexican bean, Phasseolus vulgaris, Leguminosas: Many varieties, best is called bayo gordo, sowed between the Indian corn, furnishes the principal food of the people.

Garambullo, Cereus Garambullos, Cactus with eatable reddish purgative berries.

Garbanzo, chick pea, Cicer arietinum, Leguminosas : Native plant.

Girasol or Chimalatl, Helianthus annuus : Introduced from Peru for the extraction of oil.

Grama or zacate, couch grass, Triticum repens, Gramineas : In many varieties, medicinal ; furnishes straw and roots (zacaton), the latter used for brushes, etc.

Granada, pomegranate, Punica granatum, Granateas : Introduced from Spain.

Granadita, Chinese pomegranate, Passiflora cœrulea, Passifloras : Kind of passion flower, with eatable gourd,

Guaco or Tecomate, Aristolochia grandiflora, Aristolochiaceas : Medicinal.

Guaje, Crescentia cajete, Bignonaceas : Native fruit tree of hot zone ; guaje is also a kind of gourd, Lagenaria vulgaris, see calabazas.

Guayabo, guava, Psydium pyriferum, Mirtaceas : Fruit tree of hot and temperate zones, cultivated and wild.

Haba, garden bean, Vicia faba, Leguminosas.

Heno, Spanish moss, Tillandsia asneoides, Bromeliaceas : Hanging from the cypresses, etc., in pendants and garlands as natural decoration.

Higo, fig-tree, Ficus carico, Urtiaceas.

Higuerilla, castor oil plant, Ricinus comunis, Euphorbiaceas.

Huacamote, sweet cassava or yucca, Jatropha manihot aipi, Euphorbiaceas : Mexican farinaceous plant of three varieties (see Yucca amarga) grows in the hot zone, Vera Cruz, Yucatan, etc., furnished a kind of bread and tapioca.

Huamuchil, Mimosa unguiscati, Leguminosas : Mexican fruit tree of hot and temperate zones.

Huaugzontle, Mexican asparagus, Blitum bonus Henricus, Chenopodiaceas.

Huitlacoche, eatable corn mushroom, Uredo maydis, Fungus : Grows on the ears of Indian corn.

Huizache, Acacia albicans, etc., Leguminosas : Timber and fruit (beans).

Iñame, yam, Dioscorea alata, Dioscoreas : Nutritious root, kind of asparagus ; introduced from Africa as food for negro slaves.

Ipecacuana blanca, white Ipecac, Richardsonia scabra, Rubiaceas : Native plant, grows in hot zone root medicinal, exported.

Jalapa or Purga, jalap, Ipomoea purga, etc., Convulvulaceas : Native vine of temperate zone, root medicinal ; exported in considerable quantity.

Jamaica Hibiscus sabdariffa, Malvaceas : Hot zone, red flower used for a februfuge drink.

Jicama, Dolichos tuberosus, Leguminosas : Native sweet, farinaceous root ; very much cultivated.

Jinicuil, Inga jiuicuile : Fruit tree.

Jitomate, tomato, Lycopersicum sculentum, Solanaceas : Native plant, cultivated in all zones.

Lenteja, lentil, Ervum lens, Leguminosas.

Lima, sweet lime, Citrus, limmeta, Aurantiaceas.

Limon, lemon tree, Citrus medica limonum, Aurantiaceas : Cultivated in many varieties ; lemon real, royal lemon, etc.

Linaloe, aloe tree, Amyris lynaloe, etc., Terebintaceas : Wood used for perfume, exported.

Liquidambar, Liquidambar styraoiflua : Native tree of hot zone, furnishes the sweat-gum.

Maguey, century plant, Agave americana, etc., Amarilideas : Most useful and peculiar native plant of Mexico, grows in many varieties all over the conutry, furnishes the intoxicating "pulque," the brandy "mezcal" and a strong fibre, the "ixtle." The finer fibre "henequen" and the finer brandy "tequila" are obtained from two other varieties. Lately a vinegar has been extracted from the "pulque." The Aztecs called the plant "metl" and used it besides for the extraction of "pulque (octli), for the manufacture of clothing, paper, molasses and sugar; it furnishes further gum, food, fuel, needle and thread, household furniture and other useful utensils.

Maize, Indian corn, Zea mays, Gramineas : Native lant of Mexico, the 'tlaolli' of the Aztecs, principal grain of the country ; cultivated in many varieties ; yields from 40 to 800 times, at an average from 80 to 150 times. Sown usually from April to June, harvest from September to November. It furnishes the bread (tortillas) of the people, made in round, thin cakes and without yeast.

Mamey, mammee, Lucuma Bomplandi, Sapoteas : Temperate and hot zones, furnishes fruit (after eleven years) and cabinet wood, seeds are medicinal.

Mangle, mangrove, Rhisophora mangle, Risophoreas: In forests of the east coast ; gum and timber used.

Mango, Mangifera indica, Terebintaceas : In temperate and hot zones in many varieties, fine shade trees, fruit after four years, best "mango de Cordoba" and "mango de Manila," harvest during spring and summer.

Maranta, Maranta arundinacea, Marantaceas ; Root produces the starch called arrowroot.

Melon, Cucumis melo, Cucurbitaceas.

Membrillo, quince, Pyrus cydonia, Rosaceas : Cool and temperates zones, furnishes a palatable wine, "vino de membrillo."

Mezquite, Prosopis dulcis, Leguminosas : Native tree, sweet beans are used by the Indians as food and for a fermented drink ; furnishes timber, gum, medicine.

Naranjo, orange tree, Citrus aurantium, etc., Aurantiaceas, cultivated in many varieties; fruit exported.

Nardo, tuberose, Polyhantus tuberosa, Liliaceas.

Nopal manso, prickly pear cactus, Cactus opuntia : Native cactus of many varieties, grows especially on the Central Plateau and furnishes the very refreshing and popular fruit "tuna." Harvest, from June to October. In San Luis Potosi a red kind is used for the favourite drink, "colonche."

Nopalillo, Cereus phillauthus, cactus.

Orchilla, archil, Lichen rocella : Red colour of this plant exported.

Organo, giant or candelaber cactus, Cereus exelsus Cactus : Used fer fences, etc.

Oyametl, Pinus religiosa, Coniferas.

Palo de Campeche, logwood, Hæmatoxylon campechianum, Leguminosas : Native tree of hot zone especially in Yucatan, medicinal and dyewood (blue colour) ; exported.

Palo del Brazil, brazil wood, Cœsalpinia echinata Leguminosas : Hot zone, used for dyeing and tanning exported.

Palo mulato, tawney wood, Xantoxylon pentanome, Rutaceas : Valley of Mexico, used for timber and medicine.

Palma or Izote, yucca, Yucca gloriosa, Cicadeas : Temperate and cool zones.

Palma de coco, coco palm, Cocos nucifera, Palmeras Hot zone, furnishes fruit, wine and oil.

Palma de coyol, Cocos guacuyule, Palmeras.

Palma real, royal palm, Oreodoxa sp.,? Palmeras.

Palma de datil, date palm, Phœnix dactylifera, Palmeras.

Papa or patata, Irish potato, Solanum tuberosum, Solanaceas : Introduced from South America.

Papayo, melon tree, Carica papaya, Papayaceas : Native plant of hot zone.

Patol, colorin or zompantle, Erythrina coralloides, Leguminosas : Flower eatble, seeds poisonous.

Pimiento gordo or de Tabasco, Eugenia pimienta, Mirtaceas : Hot zone, especially in Tabasco ; coudiment exported.

Pinguica or gayuba, oil nut, Arctostapylos pungens, etc., Ericaceas.

Pina, pineapple, Bromelia anona, Bromeliaceas : Native plant of hot zone.

Pitahaya, giant cactus, Cereus pitahaya, cactus : Eatable fruit, kind of prickly pear.

Platano, banana, Musa paradisiaca, etc., Musaceas : Introduced in many varieties in the sixteenth century, cultivated in the hot and temperate zones. Humboldt calls it the corn of the tropics and believes

it to be native. There is no other plant which produces so much nourishment in so small space. It is planted in sprouts and needs little cultivation; fruit can be gathered after the tenth month. One branch bears often from 160 to 180 bananas, and weighs from 80 to 100 pounds. One acre may contain 600 to 800 banana plants, which will yield annually about 800 cwt. of fruit, nourishment enough for about forty persons. The best varieties are the platano gordo, colorado, costarica and manzana.

Ramie, china grass, Urtica Boehmeria, Urticaceas: Textile plant, introduced from China.

Sandia, watermelon, Cucurbita citrullus, Cucurbitaceas.

Sauz and Sauz lloron, willow and weeping willow, Salix pentranda and babilonica, Salicineas.

Sempasuchil or Zempoalxochitl, Tagetes erecta, Compuestas: Yellow, favorite flower of the Indians.

Siempreviva, house-leek, Aizoon canariensis, Crasulaceas: Many varieties, medicinal.

Tabaco, tobacco, Nicotiana tabacum, Solanaceas: Native plant of Mexico; the yetl of the Aztecs, in many varieties in hot zone; wild in Tabasco, etc., best in Vera Cruz, Oaxaca and Tepic, further in Yucatan, Campeche, Chiapas, etc.; important article of export.

Talaycte, Gonolobus pedunculatus, Asclepedias: Eatable green fruit; harvest in summer.

Tamarindo, tamarind, Tamarindus occidentalis. Leguminosas: Hot zone, fruit medicinal, exported.

Tejocote, Mexican thorn-apple or hawthorn, Crataegus Mexicanus, Rosaceas: Native fruit tree of temperate and cool zones, abundant in fruit; harvest, October to December.

Tepeguaje. Acacia acapulceusis, Leguminosas: Hot zone, furnishes timber and gum.

Timbiriche, wild pineapple, Bromelia pinguin, Bromeliaceas: Hot zone.

Tomate, Physalis pubescens, etc., Solanaceas: Favorite Mexican condiment of many varieties.

Trigo, wheat, Triticum sativum, Gramineas: Introduced about 1530; next to corn, most cultivated grain, in Mexico; sown in November to January, harvested in April and May, yields on an average from fifteen to thirty and up to 110 times. Humboldt considers the Mexican wheat among the best of the world.

Trompetilla, Bouvardia angustifolia, Rubiaceas: Beautiful vine.

Tule, reeds, Cyperus, Cyperaceas: very prolific on the banks of the lakes; green, used as food for animals; dried to make mats, fire fans, etc., especially in the Valley of Toluca.

Uva, grape vine, vitis vinifera, Vitiferas: Introduced from Spain, best in Coahuila. Chihuahua, Puebla, etc. In Parras is manufactured a light, good wine and cognac. Wild grapes grow in various places.

Vainilla, vanilla, Epidendrum vanilla, Orchideas: Native plant of hot zone, the tlilxochitl of the Aztecs; wild and cultivated; blooms in February and March; harvest, March to June; best fruit in Vera Cruz (Papantla Misantla); production in 1880, $651,958; formerly exported exclusively from Mexico: still an important article of export.

Yoloxochitl or flor del corazon, Magnolia mexicana, Magnoliaceas: Very fragrant flower.

Yuca amarga, bitter cassava. Jatropha janipha, Euphorbiaceas: Native plant of the same kind as the sweet cassava or huacamote and although poisonous furnishes, too, after certain preparations, the same tapioca; the brown juice is used as sauce.

Zapote, sapota, fruit trees of many varieties Zapote blanco, white sapota, Casimiroa edulis, Rutaceas; zapote borracho, yellow sapota, Lucuma salicifolia, Sapotaceas, especially in Morelos—zapote prieto, black sapota, Diospyros obtusifolius, Ebenaceas. The gum of the sapotas called "Chicle," is an article of export for making chewing gum.

Zarzamora, bramble or blackberry, Rubus fructicosus, Rosaceas: Wild in the temperate and cool zones, is used in the Valley of Toluca for blackberry wine.

Zarzaparilla, sarasapilla, Smilax medica, Esparragineas: Medicinal; native plant of hot zone. especially in Vera Cruz; root exported,—*Modern Mexico.*

PLANTING NOTES.

A NEW RUBBER-PRODUCING PLANT.—M. E. de Wildeman describes in the *Comptes Rendus*, 1902, p. 400, a new species of Clitandra (Apocynaceæ), from the Congo. The species is called C Arnoldiana, and the caoutchouc is obtained by boiling the latex or milky juice with water.—*Gardeners' Chronicle.*

THE NATIVE COUNTRY OF THE COMMON LILAC,—M. LOCHOT, in a recent number of the *Revue Horticole*, establishes the fact that the common Lilac is indigenous in the Balkan range from the Black Sea to Hungary, thus confirming the opinion of M. Andre, who found it growing wild in Servia and Bulgaira.—*Ibid.*

WEST INDIAN AGRICULTURE.—Under the energetic direction of the Commissioner, Dr. Morris, the Department of Agriculture is making satisfactory progress. Over 5,000 copies of official bulletins and other publications were distributed among those concerned last year, and although practically nearly everything is distributed gratuitously, yet the sale of publications reached nearly £100. Messrs. Dulau & Co., Soho Square, are the London agents.—*Ibid.*

THE DOUGLAS FIR.—A curious case of a woman being poisoned by handling the branches and leaves of this tree while gardening, and not washing her hands before eating, is recorded by Neudorffer in the *Centralb. f. Innere Medicin.* The symptoms were spasmodic convulsions, dyspnœa, and coma. Other persons appear to have been more or less affected who were working at the same employment. It appears probable, therefore, that the tree which is cultivated for ornamental purposes, contains some poisonous ingredients to which some persons are more susceptible than others. *Nouv. Rem.*, 1903, 65—*Journal of the Pharmaceutical Society.*

GINSENG (ARALIA QUINQUEFOLIA) will not grow in this country. It has been tried again and again at Kew; the last time according to directions given by Mr. Stanton, who grows it successfully near New York; and I know of several other gardens in England where it has been tried. The directions given by Mr. J. J. Willis (p. 171) are, he informs me, taken from *Bulletin* 62 (1903) of the Pennsylvania State College, and are practically those given by Mr. Stanton. Mr. Budde, of Utrecht, in his note (p. 181) stated that Ginseng was easily cultivated in Holland, where it was grown as a market plant; but the plant he means, and of which he kindly sent me a leaf, is Pseudopanax (Aralia) crassifolium, a New Zealand shrub, of which there are large examples in the temperate-house at Kew. I have seen a plant of Ginseng in flower in the rock-garden at Kew, but it was the sole survivor of a large number that were planted a few months before. Evidently there is some condition, as in the case of (Ipecacuanha) (Cephaelis), Manilla Hemp (Musa textilis), Sandalwood (Santalum album), and certain other plants, which is essential, but as yet is unknown. Probably it is in the soil. Is it bacteria? I am told that attempts to extend the cultivation of Ginseng in the United States have proved unsuccessful. Ginseng has a parennial tuberous rootstock, not unlike a small Parsnip, annual stems a foot or so high with long-stalked palmatisect leaves, usually with five leaflets, hence the specific name. The flowers are in umbels, small, yellow, and they are succeeded by small Pea-like, bright red berries. The medicinal properties are in the roots.—W. W., Kew [*Bailey's Cyclopœdia of American Horticulture*, art. "Ginseng," may be consulted with reference to the culture of the plant in the United States.]—*Gardeners' Chronicle.*

Wilson, Smithett & Co.'s Ceylon Tea Memoranda for 1902.

LONDON, MARCH, 1903.

Although the year under review cannot be considered one of actual prosperity for tea planters generally, it may at least be regarded with more satisfaction than its three immediate predecessors, inasmuch as during its progress the industry would appear to have, at length, emerged from the period of storm and stress, resulting from over-production on the one hand, and on the other from the disorganisation caused by the additional fiscal burden imposed upon it in 1900, and the apprehensions on the same score in the two succeeding years, which found expression in the abnormal duty payments of the ante-Budget periods. Since the date of our last "Annual Memoranda," however, the clouds of doubt and depression, which so long obscured the outlook, have been almost dispersed, and we have, we believe, entered on a period which requires only ordinary care and prudence to ensure a return to comparative prosperity. If we cannot, therefore, absolutely congratulate planters upon a profitable season, we think we are entitled to indulge in more hopeful anticipations for the future. It was generally considered that the year 1902 would produce the heaviest yields yet recorded, both in INDIA and CEYLON, owing to the fact that it was the year in which the most recent important extensions would come into full bearing. The caprices of climate, however, had not been taken sufficiently into account, and the estimates made with regard to the crops both in CEYLON and INDIA proved, fortunately, to be excessive, and this factor, in conjunction with a further marked expansion in the demand for British-grown teas from extraneous markets, has resulted in a satisfactory re-adjustment of the balance between supply and demand. The problem for the future, which should now engage the serious attention of producers, seems to us to be that of securing the maintenance of this re-adjustment, and for its solution we look naturally to the steady following up of the successes already gained in the exploitation of new markets. In this connection we would strongly urge the desirability of developing, as far as possible, the characteristics peculiar to each district, so as to satisfy the varying demands, not only of foreign markets, but more especially of the United Kingdom, which, after all, constitutes the principal tea-consuming community of the world. One of the chief reasons, perhaps, of the periodical depressions experienced in recent years in the home-trade, apart from the question of over-production, has been the monotony and lack of character of a large proportion of the supplies. Too often in the past has a temporary scarcity of common tea resulted in a universal resort to coarse plucking, or a super-abundance of common tea has been followed by a general rush to the other extreme; and although in the past year plucking was evidently conducted with considerable care, we regard with some anxiety the exceedingly strong position of common tea at the present time.

The average Price of all Ceylon Tea sold on Garden Account in 1902 was 6·85d. per lb., against 6·80d. in 1901 and 7·25d. in 1900.

HOME CONSUMPTION of CEYLON tea during 1902 is somewhat disappointing, seeing that it only equals the figures of 1897, when the IMPORTS were almost 8,000,000 lbs. less. The true explanation seems to lie in the smaller proportion of common tea received, and the increased demand from Foreign markets, as well as the cheapness and abundance of INDIAN imports of a similar character. In the past year the deliveries amounted to 85,541,000 lbs. for HOME CONSUMPTION and 17,352,000 lbs. for EXPORT, whereas although 85,494,000 lbs. were cleared for HOME CONSUMPTION in 1897 the EXPORTS in that year only reached 10,684,000 lbs.

FOREIGN TRADE.—The development in this respect has again realised the most sanguine expectations, and is most encouraging for the future. The increase in the consumption of BRITISH-GROWN tea in RUSSIA is very remarkable, and now that CEYLON and INDIAN teas have gained such a foothold in that country, we may fairly look forward to an annual expansion in the quantity absorbed, and it is a most favourable feature that the demand is no longer confined to light liquoring delicate sorts and the whole-leaf grades, but that semi-broken Pekoes and ordinary fermented teas are now more freely taken, if not actually preferred. The AUSTRALIAN market has also again bought freely in COLOMBO to the extent of 19,000,000 lbs., and for AMERICA and CANADA the COLOMBO purchases of Black leaf tea shew an increase of 700,000 lbs. in 1902, having amounted to 4,365,000 lbs. against 3,654,000 lbs. in the previous year; in addition to this and to the direct EXPORTS from LONDON, transhipments from LONDON to NEW YORK shew a considerable increase.

GREEN TEA.—The ready sale of some 2,000,000 lbs. of GREEN tea in 1902 to the STATES and CANADA is of happy augury for the attempt to break down the monopoly hitherto enjoyed by JAPAN and CHINA for

this description of tea. The manufacture of this variety has materially increased since the date of our last Annual Circular, and though it must still be considered to a certain extent as experimental, there is every reason to congratulate planters on the success which this latest phase of their enterprise and energy has met with. The true Green teas, manufactured for the first time this year, are especially to be commended, and appear to us to compare most favourably with coloured JAPANS. It is open to question whether the substantial increase in the out-turn of Green tea, estimated variously at from 10 to 15 million lbs., contemplated this season is not too great, but there can be little doubt that the high rates ruling at present for JAPAN and CHINA Greens, which, as far as JAPAN is concerned, are likely to be maintained, owing to the advance in the value of labour following the development of manufacturing industries in that country, afford a most favourable opportunity for a successful assault upon the AMERICAN and CANADIAN markets, by supplying an equally good article at a more reasonable price.

PACKING.—Both wood and lead have occasionally left a good deal to be desired during the past year. The use of chests made of unsuitable or unseasoned wood has been responsible for a good deal of deterioration in values, but to the increased use of thin lead is probably due the "woodiness" which has marred the flavour of many a good tea. The economy practised in the use of "two-ounce" lead is, we think, false, as in the case of good and fine qualities the particular point and flavour is often so neutralised that a loss of 1d. per lb. in value may easily result.

Our list of Estates this year gives the quantity sold in Public Sale and average price realised of 550 marks: a good deal of tea was again disposed of privately but not to the same extent as in 1901, when the agitation in favour of unreported sales was, for a time, in force. The chief feature to note is the rather better value generally realised for low-grown tea, despite the low rates ruling for this class during the summer and early autumn. With the exception of DIMBULA, which averaged exactly the same figure as in 1901, viz., 8·25d. per lb., high grown teas generally sold at a rather lower range, and the large proportion of medium tea also shewed some irregularity. Owing to the development of the UVA side of the island—BADULLA in particular—this group of districts shews a considerable expansion in yield, and it is very satisfactory to note that this expansion was accompanied by a substantial advance in the average realised.

Estimated relative YIELD and AVERAGE PRICE realised for the different CEYLON Tea Districts, compiled from the Public Auctions held in LONDON between JANUARY 1st and DECEMBER 31st, 1902:—

	1902. lbs. about	Av. Price per lb. about 1902.	1901. lbs. about	Av. Price per lb. about 1901.	1900. lbs. about	Av. Price per lb. about 1900.
UDA PUSSELAWA	2,500,000	8·55d.	2,200,960	8·90d.		*
DIMBULA	16,000,000	8·25	19,825,000	8·25	18,250,000	8·75d.
NEWARA ELIYA, & MATURATA	2,215,000	7·85	2,350,000	8·00	4,500,000	9·10
DIKOYA	5,000,000	7·50	5,950,000	7·50	6,000,000	8·00
HAPUTALE	3,000,000	7·20	3,450,000	7·00	3,250,000	7·90
BOGAWANTALAWA	3,650,000	7·15	4,250,000	7·50	4,500,000	7·90
MASKELIYA	3,500,000	6·95	4,100,000	6·50	4,000,000	7·45
UVA	9,100,000	6·90	6,750,000	6·00	6,750,000	6·90
HEWAHETA	1,950,000	6·65	2,350,000	6·50	2,500,000	6·90
PUSSELAWA, KOTMALE, PUNDALOYA & RAMBODA	8,750,000	6·50	8,300,000	6·75	8,500,000	7·00
AMBEGAMUWA and LOWER DIKOYA	2,700,000	6·35	2,900,000	6·25	3,500,000	6·60
KNUCKLES, KALLEBOKKA & RANGALE	2,950,000	6·30	3,950,000	6·15	4,750,000	6·35
MATALE and HUNASGERIA	5,900,000	6·05	5,700,000	6·25	5,750,000	6·85
DOLOSBAGE and YACDESSA	4,150,000	6·[illegible]5	4,700,000	5·75	6,000,000	6·20
KADUGANAWA	2,150,000	6·[illegible]0	2,000,000	5·90	2,500,000	6·40
KALUTARA, AMBLANGODA & UDAGAMA	2,550,000	5·95	3,250,000	6·25	3,000,000	6·25
*KELANI VALLEY and KEGALLA	8,500,000	5·90	8,800,000	5·65	10,000,000	6·10
SABARAGAMUWA	1,850,000	5·90	1,550,000	6·00	1,750,000	6·55
NILAMBE and HANTANE	3,750,000	5·8[illegible]	3,350,000	6·25	2,500,000	6·40

Entire invoices on Garden Account only are included in the above estimate.

* UDA PUSSELAWA was grouped with N. ELIYA in 1900.

SUMMARY of CEYLON TEA sold at public auction in London between January 1st and December 31st 1902. Estimated quantity in lbs. and average prices realised:—

Average Price for the Year was 6·85d per lb., against 6·80d in 1901, and 7·25d in 1900.

The initial letters following the estate names refer to the mean elevation, as follows:—

L (low) sea level up to 1,000 feet. M. (medium) 1,000 to 2,500 feet. HM (high medium) 2,500 to 3,500 feet. H (high) 3,500 to 5,000 feet. HH (highest) above 5,000 feet.

Over 750,000 lbs.

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Diyagama ....H	1,084,000	8⅞d	1,247,000	9¼d
Demodera ....H	909,500	7d	705,500	7d
Meddecombra ....H	791,000	6¼d	731,000	6¾d

500,000 lbs. to 750,000 lbs.

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Badulla ....H	531,500	6⅝d	403,500	6⅞d
Kurugama L	527,000	6d	510,000	5½d
Mattakelly ....H	584,500	7⅜d	685,000	7⅜d
St. Leonards ......H	578,000	8⅞d	571,000	9⅛d
Sunnycroft L	650,000	6⅛d	598,000	5⅞d

350,000 lbs. to 500,000 lbs.

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Bandarapola ....HM	400,000	6d	291,000	5⅞d
Campden Hill ....M	496,000	5⅞d	505,000	6⅛d
Cannavarella ......H	357,000	8¼d	386,000	8d
Craighead ....M	469,000	6½d	493,000	6½d
Culloden L	446,000	5¾d	505,500	6d
Delmar ....H	380,500	8⅞d	303,000	9⅛d
Dunsinane ....H	408,500	7⅞d	564,000	8⅛d
Elston L	364,500	8⅛d	296,000	8½d
Fordyce ....H	366,500	7⅜d	395,500	7⅝d
Gikiyanakanda L	355,500	6⅛d	317,000	6⅜d
Great Western ....H	413,000	8⅞d	461,000	9d
Gonakelle ......HM	412,000	6⅝d	508,000	6¾d
Hauteville ....H	360,000	8½d	415,000	8¾d
IMP..............H	490,500	6¼d	510,000	6½d
K.A.W. ....HM	394,500	6d	490,000	6d
Kirkoswald ......H	426,000	7⅛d	450,600	7¼d
Ledgerwatte ......M	378,500	7¾d	330,000	7d
Le Vallon ......HM	473,500	6⅞d	458,000	7⅜d
Mahadowa ....H	403,150	6⅝d	305,000	7¾d
Mooloya ....H	372,000	7¼d	328,000	7⅝d
Nilambe ....HM	357,000	5⅞d	323,000	6¼d
New Peradeniya ..M	444,500	5¾d	441,500	5½d
Pambagama L	350,500	5½d	290,000	5d
Ragalla ....H	407,500	8⅞d	304,000	9⅝d
Rangbodde ....H	467,500	6d	352,500	6¼d
Rothschild ....H	399,500	6¼d	342,000	6⅜d
Spring Valley......H	438,000	7⅛d	381,500	7½d
St. John del Rey ..H	352,500	7⅝d	309,000	8⅛d
Talawakelle ......H	427,500	10⅛d	467,000	10¼d
Tangakelly ......H	414,000	8⅝d	383,000	9¼d
Tillicoultry ......H	371,500	9⅞d	417,000	8d
Vellai-oya ....H	370,500	6¾d	393,000	6⅝d
Wanarajah ......H	423,500	8¾d	437,000	9d
Wattegodde ......H	438,500	7½d	406,600	8⅜d
Walpola L	459,000	6d	388,000	5¾d

200,000 to 350,000 lbs.

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Adam's Peak ......H	229,000	5⅞d	217,500	6⅝d
Ambatenne L	253,000	5⅝d	243,500	5½d
Atgalla ....M	207,500	6⅝d	198,000	7¼d
Ayr L	223,500	5⅝d	208,500	5⅝d
Antony Malle ....M	298,000	6d	291,500	6⅜d
Barnagalla ......M	202,000	6⅝d	164,500	6⅛d
Beaumont ....M	311,500	5⅞d	318,000	6¼d
Bogahawatte ......H	316,500	7¼d	327,000	7½d
Bogawana ....H	201,500	7⅛d	245,500	7¼d
Brae............HM	210,000	6d	230,500	6¼d
Bridwell ....H	228,500	7d	235,000	7¼d
Campion..........H	313,000	8½d	360,500	8¾d
Castlemilk ....M	341,500	5¾d	363,000	6⅜d
Chapelton ....H	294,000	6¾d	307,000	7½d
Concordia ......HM	225,500	9⅞d	215,000	10¼d
Clydesdale ....H	255,500	9¾d	304,500	8½d
Cocagalla ......HM	333,500	7d	253,000	7d
Cranley ....H	275,500	8⅝d	289,000	8½d
Chesterford........L	251,500	5¾d		
Dartry ....M	310,000	6d	312,500	6⅛d
Degalessa L	327,500	5¾d	433,500	5¾d
Deltotte ....HM	231,500	5¾d	182,000	5⅝d
Deviturai ......HM	230,500	6⅛d	138,500	7¼d
Digalla............L	248,500	5¾d	214,000	5½d
Duckwari........HM	213,500	6⅜d	312,000	6⅜d
Doragalla	209,500	6d	20,000	8¾d
Ederapolla L	218,000	5⅞d	214,000	6⅝d
Ellekande..........L	305,000	5⅞d	231,000	5¾d
Elbedde............H	324,500	7⅝d	378,000	7⅞d
Ernan..............L	250,500	5⅞d	267,000	5⅞d
Gallebodde.........M	294,000	6¾d	233,000	7¼d
Gartmore...........H	213,500	7¼d	150,500	7¾d
Glenugie...........H	243,500	7½d	249,000	8½d
Glenlyon ....H	295,000	8⅛d	287,000	8¼d
Goorookoya ....M	329,500	5¾d	319,500	6¼d
Gouravilla ....H	312,000	7¼d	352,000	7d
Gordon ....HH	292,500	7⅛d	230,000	7⅜d
Glen Alpin........ H	307,500	7½d	302,000	7d
Gallamudina.......M	306,000	6½d	358,000	6⅝d
Hemingford L	274,000	5⅝d	543,000	5⅜d
Henfold...........H	233,000	10½d	258,000	10¼d
Hoonoocotua.......H	240,500	6d	309,500	6¼d
Holyrood East......H	304,000	9⅜d	357,000	8¾d
Holyrood West.....H	201,500	9d	197,500	9¾d
Hope .... H	207,000	6⅜d	318,500	6½d
Hopewell ....M	222,500	6½d	268,500	5¾d
Invery.............H	221,500	7⅛d	237,000	7⅛d
Imboolpittia ....M	267,000	7⅛d	351,500	6⅜d
Kadien Lena ...... M	252,000	6¾d	274,000	6¼d
Kandanewera ....HM	222,000	6⅛d	288,000	6¼d
Kehelwatte ....M	309,500	6⅝d	267,000	6⅞d
Kelburne...........H	275,500	6½d	226,500	7¼d
Kellie ....M	217,000	5¾d	295,000	5¾d
Kelliebedde.........H	244,500	8¼d	238,000	8⅛d
Kotiyagalla .... H	295,000	8¾d	338,000	8⅝d
Kottegodde ....H	332,000	6⅝d	250,000	7d
Labukelle .... H	245,000	7d	261,000	7¼d
Lawrence...........H	214,500	6¾d	193,000	6⅝d
Laxapana ....H	316,000	6½d	277,500	7d
Lippakelle..........H	234,500	8¾d	240,000	9½d
Loolecondera........H	320,000	7⅝d	323,000	7⅛d
Mahaousa ....M	216,500	6d	197,500	5⅝d
Mahaoya..........HM	235,500	5⅞d	276,000	5⅜d
Mariawatte ....H	298,500	5⅞d	290,000	6½d
Melfort ....M	260,500	6⅛d	252,000	7d
Mossville .... M	290,000	6⅛d	277,000	7⅛d
Napier ....M	225,000	6¾d	130,000	7⅛d
Nayabedde .... H	220,500	8⅛d	223,500	8⅛d
Nayapane ....HM	211,000	5⅞d	218,000	5¾d

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Needwood ....H	243,500	7d	279,000	6d
New Peacock........ H	301,000	6½d	306,000	7d
North Matale ....M	205,000	5¾d	169,000	6d
Norwood . ... H	323,000	7½d	302,000	8¼d
Ouvahkellie .... H	225,000	7⅞d	244.000	8⅜d
Orion .... M	265,000	5⅞d	197,000	5⅜d
Penrith............. L	317,000	5⅞d	293,000	5¾d
Pen-y-lan ....M	221,000	5⅜d	246,000	5⅝d
Pingarawe........HM	215,500	7⅜d	184,000	7¼d
Portmore .... H	279,000	10d	241,000	10½d
Pundaloya ....H	205,000	8½d	180,000	8⅝d
Pussetenne ....M	299,000	6d	251,000	6¼d
Queensberry.........H	285,000	7¾d	242,500	8d
Rangalla ....HM	262,000	6¾d	255,000	7¼d
Rosita.. ....H	206,500	7d	190,000	7¼d
Sandringham ....H	320,000	8½d	314,500	7⅞d
Sanquhar ....HM	255,500	6⅛d	263,500	6¼d
Sarnia .... M	202,500	7d	131,000	7¼d
St. Clair..... ....H	248,000	8⅛d	289,000	8⅝d
Sheen...................H	230,000	9⅜d	216,000	9⅛d
Sogama.. ....HM	247,500	6d	265,000	6¼d
Stonycliff.............H	226,000	6½d	283,500	6⅞d
Sorana....... L	308,500	5⅝d	279,500	5¾d
Tallagalla.... L	251,000	6⅜d	204,000	6⅜d
Thornfield............H	226,000	8⅜d	226,500	8⅝d
Tillyrie......... ......H	250,000	6¾d	126,500	7¼d
Tyspane...............H	227,000	6¾d	183,000	6¾d
Ukuwella ....M	293,500	6d	350,000	5⅛d
Ury ....M	323,500	6½d	263,000	6⅝d
Verelapatna ....H	320,000	7d	261,000	7⅜d
Waverley ....H	338,000	9¾d	400,000	9⅜d
Warriagalla ....M	294,000	6⅜d	254,000	5⅝d
Wihiragalla ....H	207,000	7⅜d	198,000	7⅛d
Windsor Forest....H	211,500	6d	227,500	6⅜d
Westhall ....HM	232,500	6d	277,500	6¾d
Wavelkelly.........M	231,000	5½d	335,000	5½d
Yatadera L	220,500	5⅞d	252,500	4½d
Ythanside ....H	209,500	6⅞d	242,500	6¾d

100,000 to 200,000 lbs.

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Abbotsford ......HH	153,500	7⅞d	179,500	8¼d
Abbotsleigh ....H	130,500	7⅜d	259,000	8d
Attabagie ....M	140,000	5⅞d	80,500	5⅞d
Albion ....H	140,500	8¾d	134,500	8d
Allakolla........HM	197,500	5⅝d	200,000	5⅞d
Allagalla..........M	181,000	6½d	200,000	6½d
Aldie ....H	195,000	8⅜d	185,500	8⅝d
Alton ....H	114,000	8d	177,000	8d
Alnwick ....H	124,500	7⅜d	128,500	8½d
Amherst ....H	196,000	8⅜d	173,000	9¼d
Annfield ....H	184,500	7½d	99,500	8¼d
Ardross L	132,000	5¾d	139,000	5⅞d
Arslena ....HM	115,500	5⅝d	141,000	5⅜d
Atherfield L	116,000	5¾d	105,000	5⅝d
Augusta Tea Estates Company .....HM	121,000	6⅛d	116,500	6⅛d
Abamalla ....H	167,500	6d	67,500	7⅛d
Appachy Totam....H	132,000	7¾d	170,000	7⅝d
Ambanpitiya	198,000	5¼d	155,000	5½d
Bambrakelly & Dell H	167,500	7⅛d	31,500	7½d
Bathford...........H	100,500	7½d	100,000	7¼d
Battagalla ....M	138,500	5⅞d	205,500	5½d
Battalgalla Est. Co. H	122,000	7¾d	75,500	8¾d
Berat ....H	107,000	7⅛d	116,000	7½d
Belgravia ....H	175,500	8⅜d	344,500	8d
Bellwood.........HM	138,000	6¼d	155,000	6¾d
Berragalla ....H	116,000	7¼d	142,500	7¾d
Binoya ....HM	187,500	6¼d	209,000	6¾d
Blair Athol ....H	149,000	6d	154,500	5⅞d

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Bogahawatte ....H	195,500	7½d	221,500	7¼d
Brookside...... H&HH	124,000	8⅞d	106,500	9¼d
Braemore . ...H	178,000	7⅜d	208,000	8d
Burnside Group .. .M	174,500	6d	261,500	5⅞d
Beddegama... .....HM	152.500	6¼d	135,500	6½d
Ballacadua ....HM	110,000	5⅛d	71,500	5¾d
Bearwell........ ......H	171,500	8¾d	200,000	8⅛d
Bothwell.............. H	121,500	5⅞d	44,500	6⅝d
Cairn-mon-earn ..HM	167,500	5¾d	155,000	6d
Calsay... ....H	179,000	7⅜d	200,000	7⅞d
Caledonia ....H	122,000	9d	155,000	7⅞d
Condegalla..... ..... H	169,500	6¼d	102,000	7d
Coolbawn .. .. M	110,000	6⅛d	86,500	6¼d
Cottaganga..... L	147,000	6⅝d	110,500	6¼d
Cullen L	129,000	6⅞d	74,000	6⅛d
Chrystlers Farm .. H	102,000	6¾d	182,000	7¼d
Dunally	175,500	6⅛d	29,900	7⅜d
Dalleagles .. ..M	158,000	5⅞d	179,000	6d
Dangkande ....HM	109,000	6d	123,500	6¼d
Deeside ....H	157,000	7⅜d	155,000	7⅜d
Dehiowita .... M	100,000	5¾d	126,000	5⅞d
Denegama ....H	145,500	5⅞d	106,500	6d
Densworth L	123,000	6⅛d	170,000	4¾d
Derryclare ....H	125,500	7⅜d	145,500	7¾d
Dessford ... .H	172,500	8⅝d	209,000	8½d
Detenagalla ....H	106,000	7⅛d	101,000	8d
Dimbula.......... H	166,000	7½d	190,000	8d
Donside ....HM	122,000	5¾d	104,500	6¼d
DoombagastalawaHM	121,000	6⅛d	88,000	6d
Doteloya..............M	148,500	5⅝d	185,000	5⅛d
Drayton .. ..H	129,500	9⅝d	161,500	9¼d
Dunedin L	188,000	5⅞d	188,000	5¾d
Ellawatte ....M	176,500	6⅞d	168,500	6½d
Eildon Hall .... .H	161,500	8½d	195,000	8d
Elfindale ....H	139,000	5½d	148,500	5⅜d
Elkadua ....HM	143,000	5⅞d	246,000	5½d
El Teb ....M	152,500	7d	305,500	6½d
Eltofts ....H	138,500	7⅛d	169,000	7¾d
Emelina .... H	113,500	7⅛d	128,500	6⅞d
Excelsior.... .....HH	124,500	9½d	80,500	9½d
Ettie L	101,500	5¼d	57,500	4⅞d
Ellamalle ....HH	151,000	6⅞d	153,000	6½d
Farm ....M	127,000	6d	145,000	6¼d
Fernlands ....H	156,500	8⅞d	101,500	9d
Fetteresso ....HH	164,000	7⅜d	159,000	6¾d
Forres ....H	147,000	7⅛d	97,500	7¼d
Ferham ....H	129,500	10¼d	121,000	10d
Galkandewatte ....H	162,000	8d	191,000	7⅛d
Gammadua ....H	189,500	5¾d	253,000	5⅜d
Glencairn .... H	110,500	6⅝d	214,000	6½d
Glenrhos L	130,500	6⅛d	202,000	5¼d
Glenloch.............M	133,500	5⅞d	138,000	6¾d
Goatfell ....H	124,500	1/0½	100,000	1/0½
Gonamatava ....H	154,500	7⅝d	178,000	7⅝d
Gorthie ....H	147,000	7⅛d	170,000	7⅜d
Goonambil ....HM	174,000	6⅛d	157,000	6⅛d
Galata ....HM	119,500	5⅝d	70,500	6⅝d
Gowerakelle ....M	161,000	6⅞d	146,000	7¼d
Gona Adika .... M	135,500	5⅝d	113,000	5⅞d
Grotto...............M	117,000	5½d	114,000	6d
Galatura L	143,500	5¾d	33,500	6⅞d
Halwatura L	166,500	5⅞d	266,000	5¾d
Hantana.............M	187,000	5¾d	163,000	5½d
Hatale...... ....H	140,500	5¾d	205,000	5½d
Hethersett ....H	151,000	7⅞d	111,000	9d
Hindagalla..........M	170,000	7⅛d	146,000	7⅜d
Holmwood ....H	140,000	9⅜d	120,000	10¼d
Hunasgeria.......HM	164,500	5¾d	140.500	5⅝d
Halgolle L	138,500	6⅜d	313,000	5⅞d

	1902 About lbs.	Av. price per lb.	1901 About lb.	Av. price per lb.
Hapugastenne ....H	143,000	6⅞d	308,500	5⅞d
Harrington ......H	112,5,0	7⅜d	83,500	7⅝d
Indurana..........L	162,500	6d	125,500	6d
Ingestre ....H	199,500	9¼d	214,000	8¾d
Ingurugalla ......M	101,500	5⅞d	99,000	5⅞d
Kabragalla........H	159,500	5⅞d	227,000	6d
Kaipoogalia ......H	107,000	6¾d	113,000	7¼d
Kalupahani ......H	137,000	6⅜d	114,500	7d
Kataboola ....H	196,000	6¾d	192,500	7⅛d
Keenakelle L	189,500	6⅜d	157,000	6⅜d
Kelliewatte ......H	112,000	6⅝d	129,000	8d
Kelvin............M	122,500	6⅛d	102,500	6½d
Kintyre ....H	119,500	6⅝d	140,000	6¼d
Kirrimittia........M	145,000	6⅜d	187,000	6⅛d
Knuckles Group HM	189,500	6⅛d	251,000	5¾d
Kowlahena ......H	115,000	8d	100,500	8½d
Kuda Oya ....H	176,000	6½d	187,000	6¾d
Kew ....HH	111,500	7d	155,000	7¼d
Katooloya ....H	195,500	6⅝d	252,000	6⅜d
Lagalla ....HM	169,500	5⅞d	117,000	5⅝d
Lavant............L	179,000	5⅞d	161,000	5⅞d
Lindoola..........H	182,000	7¼d	177,000	8¼d
Loinorn ....H	101,500	8½d	94,000	8⅜d
Luccombe ......HM	185,500	6⅛d	191,500	6¼d
Lynford ....H	131,000	6⅞d	129,500	8⅜d
Leangawella ....HM	142,500	7¾d	137,000	7⅞d
Logie ....H	115,000	7⅝d	96,500	7¾d
Lochnagar ....M	102,000	6⅜d	40,300	6⅜d
Longford........HM	119,500	5⅝d	14,800	5⅛d
Lonach ....HM	116,500	5⅝d	132,000	5⅞d
Malvern ....H	147,000	6d	94,500	6¼d
Medenpennakande ..L	105,500	5⅝d	113,000	5⅝d
Madampe ......HM	199,500	5¾d	188,500	5⅝d
Maddagedera L	138,500	5⅝d	218,000	5⅜d
Mahagalla ....H	131,000	6⅝d	139,000	7d
Mahagastotte......H	168,000	7⅝d	146,500	8⅝d
Maratenne ....H	137,000	7⅛d	126,500	8d
Meria Cotta ......H	194,500	7⅝d	182,000	8⅞d
Meeriabedde ......H	125,500	6¾d	288,500	6d
Midlands ......HM	155,000	5⅞d	156,000	5⅜d
Minna ....H	138,500	7⅛d	175,000	7d
Mayfields ....H	176,500	7¾d	275,000	7⅛d
Mipitiakande L	155,500	5⅝d	203,500	5⅝d
Morar ....H	179,500	6⅜d	237,000	6⅜d
Moolgama ....M	111,000	6⅜d	117,000	6½d
Moralioya L	111,000	5⅝d	104,000	5¼d
Mount Pleasant...HM	104,500	6⅛d	137,500	6¾d
Mount Vernon ....H	185,000	10d	248,500	9⅜d
Mudamana L	153,000	5⅝d	202,500	5⅜d
Memorakande ....H	136,500	6⅝d	163,500	6¼d
Meddakande ....M	161,300	6¾d	193,500	6¼d
Mahakande ....H	182,500	6½d	22,500	7d
Maymolly .... H	115,500	7d	70,000	7½d
New Rasagalla ...HM	122,000	6¾d	254,000	6⅝d
Nikakotua L	166,500	5½d	170,000	5½d
New Forest..........H	134,500	6¼d	113,000	7⅛d
Newton ....H	140,500	6⅝d	133,000	7⅛d
Nicholaoya.. ......HM	146,000	6⅜d	231,500	6⅛d
Osborne.......... ....H	158,000	6½d	191,000	7⅝d
Oaklands L	103,500	5½d	41,500	5⅜d
Pansalatenne . ... . M	134,000	6d	129,000	5¾d
Parragalla..........HM	182,500	6½d	262,000	6⅛d
Park... ....HH	130,500	8½d	125,000	9d
Pita Ratmalie. ... ..H	157,500	7⅜d	130,000	9⅜d
Portree............. ..H	157,000	6⅛d	164,500	6⅜d
Portswood....... ..HH	108,500	8½d	176,000	8½d
Poyston . ...H	102,000	6¾d	119,500	6½d
Poengalla ....M	134,500	6⅛d	64,000	6⅜d
Rugby.......... .....M	197,500	6⅜d	198,500	6⅛d

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Radella .... H	127,500	6½d	115,500	7¾d
Rappahannock.......H	140,500	7½d	120,000	7¾d
Ravenswood .. .. H	119,500	6⅜d	125,000	6⅛d
Relugas ....HM	169,000	6¼d	177,000	5¾d
Riverside.... . ...M	151,500	5½d	157,000	5⅜d
Rickarton ....HM	103,000	6½d	150,000	6d
Rillamulle ....H	109,000	7⅞d	89,500	7¼d
Rutland .... H	166,000	6¼d	298,000	6⅛d
Rookatenne.... . . ..M	176,000	6¾d	97,000	6⅝d
Shamrock..... . .... M	176,500	5⅝d	162,000	5d
St. Andrew's (Mask)H	152,500	6½d	196,000	6½d
Shawlands ....H	167,500	6⅛d	85,500	6½d
Silver Kandy.......HH	102,500	8¾d	133,000	7⅛d
Somerset .... H	160,000	7¼d	162,500	7⅜d
Springwood ....M	119,500	5⅝d	131,000	5⅜d
Strathdon... ......HM	108,000	6⅝d	183,000	6¼d
Stockholm ....H	186,500	6⅝d	184,000	7⅛d
Sapumalkande L	174,000	5¾d	120,000	5⅛d
Shrub's Hill.......HM	177,500	5¾d	97,500	6⅜d
Syston ....HM	128,500	6⅝d	26,500	7⅛d
Taurus .... H	110,000	8⅛d	155,000	8¼d
Thotulagalla. ....H	101,500	7½d	95,500	10½d
Troy...... L	101,500	5⅝d	131,000	5d
Troup............ ..... H	163,500	8⅞d	146,500	8⅝d
Telbedde ....HM	141,500	7¼d	105,000	6¾d
Udaradella ....HH	197,500	9⅜d	224,000	9d
Ugieside .... M	147,000	5½d	140,000	5½d
Uva ....H	161,500	6⅛d	146,500	5⅞d
Uvakellie ....H	165,500	7¼d	145,000	8d
Upper Haloya........M	151,500	5½d	207,000	5⅜d
Uralindatenne......AM	159,500	5¾d	13,400	7d
Valamaly.... ....H	114,500	6⅞d	135,500	7½d
Venture............... H	175,500	7d	196,000	7d
Verulupitiya.......... L	150,000	5⅞d	144,000	5⅝d
Valley Field..........M	145,000	5⅝d		
Wavena ....HM	147,000	5¾d	88,500	5⅝d
Waldemar..............H	127,000	7½d	140,000	7⅜d
Wallaha ....H	118,000	7⅛d	111,000	8⅛d
Waltrim ....H	152,500	7¾d	133,500	7⅞d
Wangie Oya........ .H	185,500	7⅝d	222,000	7⅝d
Wattakelly............H	125,000	6¾d	157,500	6⅝d
Wereagalla L	190,000	5⅝d	215,000	5⅝d
Wewelmadde.........M	120,000	6d	113,500	6⅛d
Wewesse ... .HM	127,000	6½d	114,000	6½d
Wevekellie...... .... M	125,000	6⅛d	83,000	6½d
Weyweltalawa ....M	103,500	6½d	58,500	7⅞d
Wootton ....H	160,000	8⅛d	156,500	7⅝d
Weddemulle..........H	103,000	6¼d	98,500	7d
Yahalakela L	111,500	5⅞d	111,000	5½d
Yapame.. ....H	129,500	6⅞d	97,500	6⅛d
Yoxford .. .. H	124,000	8d	159,000	8⅛d
Yahalatenne .... HM	108,000	6d	110,000	6⅜d
Yellangowry ......HM	152,000	5½d	53,000	4¼d

50,000 to 100,000 lbs.

Abergeldie ....HM	63,000	6⅜d	72,500	6¼d
Agrakande ....H	75,000	8⅛d	104,500	7⅝d
Allerton ....M	83,000	5¼d	48,000	4⅞d
Ampittiakande .....H	84,300	6⅛d	89,000	6⅛d
Ankande ....M	61,000	5⅝d	59,500	5¾d
Ambawella............H	80,500	6⅛d	67,500	7⅛d
Asgeria ....M	89,500	6⅜d	108,500	5⅞d
Batgodde .. ..H	56,000	7⅝d	75,000	7½d
Berrawella............M	65,000	6¼d	51,000	6⅜d
Beaconsfield..........H	67,500	8d	53,500	8¼d
Blackburn..............M	90,500	6d	109,000	6⅛d
Blackwood ....H	85,500	6d	94,500	6¾d
Blair Avon............H	63,500	6⅜d	79,500	7d
Bon Accord ....H	76,500	6⅜d	75,000	7⅜d

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Broughton ....H	62,000	6½d	93,000	6⅝d
Bowlana ....M	52,000	6⅜d	103,000	5⅝d
Blackwater	62,000	6d	14,800	6⅜d
Carlabeck	99,000	8d	112,000	8¼d
Cattaratenne .... HM	92,500	6d	110,500	5¾d
C'Galla ....M	75,500	7d	74,500	7⅜d
Clontarf L	92,500	5⅞d	110,500	5¾d
Craig ....M	97,500	8½d	70,000	8⅝d
Carriglea	54,500	6⅞d		
Deanstone........... H	85,000	6⅝d	70,000	7⅛d
Delpotonoya..... ... H	66,500	6⅞d	66,000	6¼d
Deyanella...........HM	89,500	6¾d	91,000	7½d
Diyanillakelle ...... H	94,500	10½d	129,000	10d
Devon.................. H	50,500	7⅛d	102,000	8⅝d
Darrawella............H	72,000	6⅝d		
Dickheria ....M	64,500	5⅛d	10,000	6d
Dawatakella .... H	66,500	6¼d		
Edinburgh ... . .H	69,500	8d	129,500	7½d
Evalgolla .... HM	75,500	5¾d		
Fairfield .... H	96,500	8½d	65,000	8⅞d
Faithlie ....H	81,000	7⅜d	92,500	8¼d
Fassifern .. ..H	80,500	7¼d	80,500	7⅜d
Fruit Hill .... H	88,500	6⅜d	99,500	6¾d
Galgawatte .. ..M	86,500	6d	94,500	6¼d
Ganapalla L	59,000	5¾d	51,000	4¾d
Gavatenne.. ...... HM	63,000	7⅜d	73,500	7¾d
Glentaaffe .... H	66,500	7d	94,000	7¾d
Glenanore ... . H	63,000	7¼d	32,500	8½d
Glenesk L	50,000	5 d	49,000	5¾d
Hatherleigh .... M	54,000	5½d	70,500	4⅞d
Heatherton ....HM	59,000	6⅜d	67,000	6d
Hunugalla .... H	82,000	5¾d	106,500	5⅝d
Hyndford ....M	92,000	7d	162,000	6⅞d
Harmony ....M	55,500	5¾d	77,500	5⅝d
Halwatura ...E...... L	98,000	6¼d	266,000	5¾d
Ivies.............. L	63,500	5¾d	97,000	5¼d
Ingoya ....M	76,500	5⅝d	129,000	4⅞d
Igalkande ....HM	90,000	5½d	64,000	5¾d
Iona .. ..H	98,500	8¾d	44,500	9d
Kaloogala ....M	97,000	6½d	107,500	6⅞d
Kottagalla .. ..H	90,000	7⅛d	104,500	7⅜d
Karandupona.........L	71,500	5⅜d	43,000	5⅝d
Lauderdale.........HM	98,500	5⅞d	94,500	5¾d
Leangapella ....H	84,500	5⅝d	99,000	5⅜d
Lovers' Leap .. .. HH	95,000	8⅝d	25,500	9d
Macduff .... H	80,700	7½d	152,000	7¾d
Mahacoodagalla . . H	77,000	7⅞d	80,000	8⅜d
Marakona .... .M	83,000	5⅞d	54,500	6¼d
Mincing Lane ...... H	72,000	7¼d	83,000	7½d
Mottingham ....H	96,500	6⅜d	106,500	6½d
Mousakelle............H	53,500	6⅛d	50,000	6¼d
Meddetenne .... M	74,500	5½d	75,500	5¼d
Nahaveena ....HM	53,000	5¼d	51,500	5⅞d
Nugahena .... M	67,500	5¾d	63,000	5⅝d
Nahalma L	73,000	5⅛d	70,000	4½d
Narangalla.. ....M	84,000	5⅝d		
Nawalakande . , ...	63,500	6⅛d	138,000	7d
Nutbourne .... H	68,500	10¾d	80,000	9¾d
Opallgalla . .. .: H M	87,500	6½d	113,000	5⅞d
Ormidale .... H	61,500	7½d	84,500	9¼d
Pati Rajah . ...M	91,500	5½d	55,500	5⅞d
Pedro .... HH	76,500	8⅛d	126,000	8½d
Panmure .... H	60,000	6⅜d	81,500	6¾d
Peacock Hill .. ...HM	89,000	5⅞d	84,000	6d
Pitakande .. .. HM	69,000	6⅜d	245,500	5⅛d
Poonagalla .. .... HM	76,500	7¾d	303,000	6⅝d
Parkfield	96,000	7¾d	52,000	7¾d
Poolbank ....H	64,500	7¾d	37,000	7⅝d
Rassagalla ....HM	71,500	6⅛d	33,000	5⅞d
Rhanwatte............H	91,500	6⅝d	99,000	7¼d
Raxawa .... M	91,000	6d	48,000	6¼d
Ritnageria......... ...H	84,000	8⅜d	109,500	8¼d
Sirisande..... L	79,500	6d	78,000	5½d
Stinsford L	91,500	5⅝d	104,500	5⅝d
Stonyhurst... .. HM	58,500	6⅝d	66,000	6⅜d
St. Andrew's (Dimb H	98,500	8⅝d	57,000	8⅜d
St. Leys .. ..H	58,000	6⅝d	65,500	7⅛d
St. Margarets .. ....H	62,500	8¼d	63,500	8d
South Wana Rajah ...	97,000	6⅝d	121,000	7⅛d
Shannon ....HM	69,000	6½d	84,500	6⅜d
Sutton.....................H	87,500	10⅞d	108,500	11⅛d
Stisted L	96,500	6⅝d	101,500	6½d
Scrubs .... H	50,000	7⅛d		
Taunton	84,500	6d	65,000	5¾d
Tebuwana	73,000	5⅝d	65,000	5¾d
Tientsin ....H	80,500	7¼d	142,000	7¾d
Uma Oya...............M	69,000	6½d	54,500	7⅝d
West Fassifern ... H	90,500	7¼d	69,000	7¾d
Warriapolla .... M	50,000	6⅛d	64,000	6d
Westward Ho... ..HH	97,000	9d	71,000	8⅝d
Wattawella .... M	87,000	6¾d	71,000	6¾d
West Haputale ......M	97,000	6⅝d	110,500	6⅞d
Wigton..... ....H	84,500	6¾d	162,000	6⅜d
Wellington.............H	61,000	7⅞d	58,500	7⅞d
Weymouth L	63,000	5¾d	64,500	5¾d

20,000 to 50,000 lbs.

	1902 About lbs.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Acrawatte ....HM	38,000	6⅝d	54,500	7⅛d
Avoca .. .. H	23,500	7d	28,500	7d
Atherton .. . . M	46,500	5¾d	55,000	5⅜d
Agra Oya........... HM	24,500	6⅛d		
Beauvais............... H	37,500	6¾d	34,000	6¾d
Beverley L	25,000	6¼d	84,000	6d
Bramley ....H	32,500	6⅞d	62,000	8⅛d
Craigie Lea . .. .H	38,000	6⅞d	26,500	6⅜d
Coreen .... H	26,500	7⅛d	23,000	7d
Dalukoya .... H	26,500	6⅛d	58,000	6½d
Delta ....H	32,500	5½d	168,500	6d
Dewalakanda L	34,500	6¼d	167,500	5⅜d
Dunnottar ....H	23,000	7⅛d	27,000	6½d
Eladuwa L	31,500	5d	25,000	4⅝d
Findlater ... .HM	30,000	6¼d		
Gantenne ... .M	21,000	5½d	20,500	4⅞d
Glendevon .... H	39,500	7½d	26,500	9¼d
Gonavy .... H	28,500	6¼d	50,500	6½d
Hornsey Estate Co H	32,500	6⅞d	25,500	8¼d
Hillside ....M	48,000	6¼d	23,000	7¼d
Hittuwellatenne..HM	27,000	6¾d		
Hiralouvah..... .. HM	27,500	5½d		
Idulgasheena ......HM	41,000	6½d		
Indian Walk L	48,000	5⅛d	62,500	5d
Kallugalla ....HM	38,500	5⅜d	36,000	4⅞d
Kallebokka ....M	29,000	7⅛d	88,500	6⅞d
Lamiliere .... H	34,000	6¼d		
Lauriston .... HH	42,500	6½d	35,000	7⅛d
Moray ....H	48,000	6¾d		
Manickwatte .. ....H	39,500	6⅛d	20,500	6d
Monte Christo ......M	26,000	6¾d	36,000	5¾d
North Cove .... H	37,500	7¾d	78,000	8d
Norton ....HM	47,500	6⅜d	53,500	6⅛d
New Valley ... .H	26,000	6⅝d		
Ottery .. .. H...	28,500	5⅝d		
Ohiya ....H	48,000	6⅞d	41,500	6⅞d
Old Haloya. ....M	30,000	5⅜d	32,500	5¾d
Oakwell .. ..H	24,500	6⅛d	21,500	6⅜d
Pondappe ....HM	29,000	5⅞d	33,000	5½d
Rajawella L	32,000	6⅛d	43,000	5¾d
Rangweltenne .. HM	26,000	5⅜d	66,000	5¼d

	1902 About lb.	Av. price per lb.	1901 About lbs.	Av. price per lb.
Sinnapittia ....M	30,500	6¼d	30,500	6d
Stellenberg ....H	21,000	6⅝d	28,000	6⅛d
Stubton .. ..M	21,500	5¼d	42,000	4¾d
Summerville ....M	44,500	6⅜d	49,000	5⅝d
Theresia .. .. H	48,500	6½d	135,000	8⅛d
Udabagie.......... ...L	36,000	6⅜d	64,500	5¼d
Vicartons ....HM	48,500	5⅝d	50,500	5½d
Wiltshire ....HM	26,000	5½d	15,500	5⅝d
Weemalle .. .. M	29,000	5⅞d	15,000	6¼d

Weekly Public Auction of Ceylon Tea during 1902 with average price realised :—

Week ending.	Number of Pkgs. offered in auction.	Av. price per lb.	Av. price per lb. for corresponding week 1901.	Week ending.	Number of Pkgs. offered in auction	Av. price per lb.	Av. price per lb. for corresponding week 1901.	Week ending.	Number of Pkgs. offered in auction.	Av. price per lb.	Av. price per lb. for corresponding week 1901.
Jan. 4	10,660	7·60	7·10	May 3	18,600	6·55	6·65	Aug. 30th	29,900	6·50	7·00
,, 11	21,340	7·50	6·75	,, 10	27,640	6·50	6·55	Sept. 6th	27,340	6·50	6·95
,, 18	32,400	7·40	6·60	,, 17	26,900	6·60	6·45	,, 13th	26,500	6·50	7·15
,, 25	25,000	7·50	7·00	,, 24	no sales	—	6·60	,, 20th	25,000	6·40	7·60
Feb. 1	27,240	7·30	6·50	,, 31	30,250	6·75	no sales	,, 27th	16,700	6·75	7·95
,, 8	28,450	7·10	6·30	June 7	30,800	6·70	6·50	Oct. 4th	25,690	6·65	8·00
,, 15	25,500	7·10	6·00	,, 14	29,000	6·65	6·45	,, 11th	20,100	6·80	7·80
,, 22	23,000	6·90	6·30	,, 21	26,600	6·55	6·35	,, 18th	19,840	7·25	7·80
March 1	25,760	7·15	6·50	,, 28	no sales	—	6·35	,, 25th	22,580	7·40	8·05
,, 8	21,500	7·15	6·50	July 5	27,200	6·20	6·30	Nov. 1st	22,100	7·20	8·20
,, 15	25,000	7·15	6·50	,, 12	33,300	6·00	6·45	,, 8th	16,000	7·25	7·90
,, 22	23,200	7·10	6·70	,, 19	32,500	6·05	6·25	,, 15th	15,725	7·80	7·65
,, 29	24,800	7·00	7·00	,, 26	34,000	6 10	6·50	,, 22nd	16,000	7·80	7·60
April 5	no sales	—	7·40	Aug. 2	29,336	6·30	6·50	,, 29th	17,600	8·15	8·00
,, 12	26,500	6·90	no sales	,, 9	no sales	—	—	Dec. 6th	17,500	7·60	7·55
,, 19	28,300	6·85	7·35	,, 16	29,900	6·30	6·70	,, 13th	17,000	7·80	7·55
,, 26	23,600	6·65	6·90	,, 23	28,960	6·50	6·65	,, 20th	19,900	7·80	7·55

Distribution of Ceylon Tea.—The total Exports from Colombo in 1902 amounted to 149,000,000 lbs. against 146,726,000 lbs. in 1901, and 148,569,477 lbs. in 1900; of this total 103,656,000 lbs. were shipped to the United Kingdom against 106,911,800 lbs. in 1901, and 114,229,650 lbs. in 1900. The following table, taken from Messrs. Forbes and Walker's compilations, shews the distribution from Colombo for the past four years.

Year.	United Kingdom.	Russia.	Other Countries in Europe	America & Canada.	Africa and Mauritius	Australia.	India.	China and Singapore.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Black 1902	103,017,958	12,423,741	1,581,953	4,364,558	710,066	18,907,720	824,826	4,492,304
Green ,,	638,330	127,115	—	1,963,892	2,535	75	35,635	6,340
1901	106,911,806	9,498,801	1,480,124	3,654,105	412,225	20,696,995	1,108,043	2,963,967
1900	114,229,649	8,959,784	1,319,667	4,112,208	384,991	17,434,374	1,126,949	1,001,855
1899	103,948,124	3,949,740	885,051	3,080,002	388,487	15,606,833	567,616	1,468,303

Distribution of British Imports of Ceylon Tea during the past four years, taken from the Board of Trade Returns :—

Year.	Home Consumption.	To Countries in Europe (chiefly Russia).	To U.S. of America.	To British N. America.	To Other Countries.
1902..................	85,540,878 lbs.	8,221,979 lbs.	2,398,438 lbs.	3,120,456 lbs.	3,611,472 lbs.
1901..	90,825,521 ,,	10,023,370 ,,	2,504,299 ,,	2,390,894 ,,	3,154,105 ,,
1900.................	92,470,019 ,,	8,487,968 ,,	987,500 ,,	2,131,367 ,,	2,168,585 ,,
1899.................	85,137,945 ,,	7,265,266 ,,	1,391,931 ,,	2,084,865 ,,	1,402,361 ,,

HOME CONSUMPTION of INDIAN and CEYLON Tea Compared with that of CHINA and OTHER COUNTRIES last year, five years, and ten years previously taken from the BOARD OF TRADE RETURNS :—

	1902.	Per centage of total.	1897.	Per centage of total.	1892.	Per centage of total
INDIAN ...	148,728,000 lbs.	58·45	124,500,000 lbs.	53·76	109,500,000 lbs.	52·88
CEYLON ...	85,541,000 ,,	33·62	85,500,000 ,,	37·00	63,100,000 ,,	30·46
CHINA &c.,...	20,171,000 ,,	7·93	21,370,000 ,,	9·24	34,500,000 ,,	16·66
Total ...	254,440,000 lbs.		231,370,000 lbs.		207,100,000 lbs.	

RE-EXPORTS of INDIAN and CEYLON Tea Compared with that of CHINA and OTHER COUNTRIES last year, five years and ten years ago taken from the BOARD OF TRADE RETURNS :—

	1902.	Per centage of total.	1897.	Per centage of total.	1892.	Per centage of total.
INDIAN ...	13,922,000 lbs.	30·60	5,497,000 lbs.	15·04	3,762,000	10·11
CEYLON ...	17,352,000 ,,	38·15	10,502,000 ,,	28·74	3,448,000	9·26
CHINA &c., ...	14,216,000 ,,	31·25	20,547,500 ,,	56·22	30,014,000	80·63
Total ...	45,490,000 lbs.		36,546,500		37,224,000	

LABOUR AND PRODUCTS IN BRITISH CENTRAL AFRICA.

We have received on the above subject an interesting letter from the Rev A Hetherwick, D D, head of the Blantyre Mission in British Central Africa. With regard to the suggestion that Central Africa should be opened up from the Nile to the Zambesi as a recruiting ground for native labour for the mines Rhodesia, the Transvaal, and the labour markets of the South African colonies, Dr Hetherwick writes :—"The proposal has caused grave anxiety here to all whose interests are bound up with the welfare and progress of the Protectorate of British Central Africa and its people. These are so closely connected with the labour supply of the country, that any attempt to draft natives out of the Protectorate will be fatal to the very existence of the agricultural and commercial interests that have done so much to open up Central Africa to the pacifying and civilising influences of legitimate trade. At present all recruiting of natives for service outside of the Protectorate is forbidden by ordinance of his Majesty's Commissioner. This ordinance was enacted in view of the fact that the supply of native labour has in past years barely sufficed for local needs." The necessity of a railway across the Shiré highlands to set free for the agricultural industries of the Protectorate the labour now absorbed in transport work between the upper and lower Shiré rivers has at last been recognised by his Majesty's Government, and a concession granted to a private company for the construction of a line from Chiromo to Blantyre, which it is expected will be commenced in April next. "For the construction of this railway a larger amount of labour will be demanded than the Protectorate is able to provide. As I write, the cry from the transport and planting companies is for more labour. The Labour Bureau, the one organisation sanctioned by Government for the proper distribution of the available labour imported from the outlying districts, has on its books at the present moment demands for upwards of 5,000 which it is unable to supply. In such circumstances, to allow any of the labour to be drafted out of the country to the mines of the south, is to cripple most seriously the commercial and agricultural institutions which are at present struggling to maintain their foothold in the country. These institutions have invested during the past dozen years no small amount of capital. The three chief transport companies are valued at £330,000, while a new company which has secured the concession for the construction of the railway has been registered with a capital of £1,000,000. .... The necessities of the country itself demand the retention of the labour of its people for the cultivation of its soil and development of its own resources. Central Africa has no indigenous product such as will form a staple export. The supply of native rubber is exhausted, and so, too, is the ivory trade. Coal there is on the hills above Lake Nyasa and in the Lower Shiré valley. There is gold in the Machinga mountains on the borders of the Congo Free State. But the true wealth of the country lies in its soil. There are thousands and thousands of square miles of land along the river, valleys and over the countless hill slopes now lying waste and arid, waiting for the hoe and the spade or the plough. Given labour and capital, together with easy transport and direct shipping connection with the home markets, and these wastes might become fertile fields of cotton, tobacco, sugar, chillies, &c. Without its labour Central Africa will never be developed, will never become a self-supporting asset of our Empire. The climate forbids any hope of the utilisation of the white man in manual labour, and all hope of advancement depends on a sufficient supply of native labour being always assured. To remove the native from the country, which itself needs his labour so sorely, is to throw an insuperable barrier across the future progress of the Protectorate."—London *Times*, March 24.

BLUE HYDRANGEAS.—The cause of the blue coloration has been the subject of multiple discussion, but so great is the conflict of evidence, that it cannot yet be said any satisfactory conclusion has been arrived at. In a recent number of the *Revue Horticole* we find a statement to the effect that certain plants whose roots were in contact with a fragments of slate had fallen from the roof of mansion produced blue flowers. Elsewhere, where fragments of tiles were mixed with the soil, the flowers were of a rose colour. Here is another experiment which might be tried at Chiswick.—*Gardeners' Chronicle.*

AUSTRALIAN PEARLS AND MOTHER-O'-PEARL OYSTERS:

AN EAST AFRICAN ISLAND AS A CENTRE FOR PEARL FISHERIES.

AMERICAN RIVER PEARLS.

At the time we visited Fremantle and Perth and made a short tour through Western Australia, in September 1875, very little was known of the Australian Pearl Oyster Fisheries. The more extensive fisheries were entirely on account of the shells:—some of the Nickoll Bay Shells (specimens of which we lodged in the Colombo Museum being 6 to 7 lb. weight the pair, thickly coated with mother-o'-pearl and often with noticeable raised "blisters"—of which more anon. The Shark Bay Oysters, on the other hand, about three times the size of those of Ceylon, were fished or rather dredged, solely with reference to pearls. Here then we may reproduce some manuscript notes drawn up 28 years ago; but for some reason not given at the time in the *Observer*. They are, however, of some interest at the present time.

"At first, there was no expectation of finding pearls, and indeed very few were discovered in connection with the West Australian fisheries. The great impetus to the trade in pearls was given by the discovery by Mr. Mason, a jeweller in Fremantle that the raised blisters which are rather common on the nacre inside the larger mother-o'-pearl shells, usually enclosed pearls of great purity and value. This enterprising and skilful manipulator, with whom I had some conversation, assured me that he was first led to pick at these blisters which had never previously attracted attention, through the great scarcity of pearls such as usually came in from Shark's Bay. Peeling away at the blister he soon found that a very fine pearl was enclosed which could be removed without sustaining injury. Every blister was now an object of great interest and value. The secret soon oozed out and the trade in pearls became an extensive and valuable one. Occasionally large blisters or excrescences inside the shells, giving promise of enclosing fine pearls are found to be empty. But, the largest which have yet been seen in the market have been obtained from such blisters rather than from the fleshy body of the oysters. The best pearls got from the Shark's Bay oysters, I was told, averaged from 18 to 24 grains, while from the large Nickoll Bay Shells, pearls of 40 grains were the rule and some had been pricked out as heavy as 82 and 125 grains each. One of the finest pearls yet found is said to have been purchased for the Crown Princess of Prussia for the sum of £2,000 I was told of a small but select consignment of pearls recently sent to England by a private gentleman which was expected to realise a considerable sum, leaving a handsome profit. One pearl—double the size of a pea—was valued at £1,500. I heard of a dealer pestered at a time when pearls were not so much valued in Fremantle as they are now to buy a pearl by a man newly arrived from a Fishery. He did not care about it, but was importuned to give at least all the money he had about him—the encounter was in the street—and so he handed the large sum of

2d and received a pearl which afterwards proved to be worth over £100! A great many small and seed pearls are, of course, found and for these a ready market is found in England at so much per ounce. There is also a considerable proportion of yellow pearls. These are at present regarded as of little value; it being reported that they will not sell in London; but I found a rumour current that they were much prized in India. I could not say whether they are or not; but I have got one or two small specimens with me on which to get the opinion of competent judges. To get at any pearls in the oysters, the mode adopted is to boil down the flesh on the latter. Of pearls the quantity entered in the Custom-house as exported last year stand at a value of £6,600.

Since 1875, Saville-Kent has investigated—and he and others have written freely about—the Australian oyster fisheries. None of the Tahitian species, with black-edged shells, are found on the Westralian Coast.

There is an island some distance off the land from Portuguese East Africa which is believed to be surrounded by banks covered with Pearl Oysters, never properly fished—if fished at all. It was the subject of a Consular report some years ago, and with the South African war intervening, we do not know that any notice has been taken of it up to the present day.

It is not generally known that in America, pearls—and some of them very fine—are found in mussels in the rivers, just as in Scotland and Wales, mussels in the Tay and Conway have often yielded fine pearls. More than 10,000 dollars worth of pearls were sent from Wisconsin to New York in a few months of 1890-1; but the rivers there got worked out and now the States in which pearls are chiefly found are Kentucky, Tennessee, Arkansas and Texas. If limestone prevails near the rivers, it is noticed that pearls are more likely to be found. They are of all colours from pure white to that of a drop of molten copper. There are, of course, pearl-oyster fisheries off Southern California and west of Panama and attempts at culture have been made near the Gulf of California.

COFFEE, CARDAMOMS AND PEPPER IN COORG.

We are in receipt of a copy of the Administration Report on the Province of Coorg for 1901-2, with a note by Lieut.-Colonel Donald Robertson, C.S.I., Chief Commissioner of Coorg, in which he states:—"The province of Coorg is still suffering from the depression brought about by the deterioration of the coffee industry." To us it is wonderful that Coorg coffee has kept up so long as it has, and that there should still be 45,000 to 90,000 cwt. exported annually according to season. Coorg has an area of 1,500 square miles, a little more than our Western Province; but with a population of only 18?,000—not much more than there is within the Colombo Municipality,—the total revenue being under three-quarters of a million of rupees. The following extracts are of some interest to our

planting readers; more especially the reference to Cardamoms, Pepper and Orange cultivation taking the place of coffee :—

The extent actually cultivated with coffee (58,393 acres) declined by over two thousand acres owing to the relinquishment of ruined coffee gardens owned by native planters, though the area cultivated under European methods exhibited a slight extension. Some idea of the depressed condition of the planting community may be gathered from the fact that of the total holding under the coffee tenure only some 57 *per cent* is now actually under coffee, cardamoms and oranges having taken its place over an area estimated at some 12,000 acres, while another 31,000 acres consists of abandoned coffee and unplanted jungle. Special concessions and reductions of assessment have been found necessary in regard to large areas; during the year under report alone, such reductions were sanctioned in respect of some 1,700 acres and orders were awaited in regard to similar proposals affecting a further extent of 2,800 acres. Prices revived somewhat as compared with the low rates prevailing in the previous year, but the variation, in no case material, was more than neutralised by the unfavourable season, heavy rain in the blossoming time having affected the crop so seriously as to reduce the outturn to little more than half the normal figure.

The cultivation of cardamoms enjoyed no more favourable conditions. The outturn was normal, but prices continued at the low figure which has for years past practically ruined the industry, nor were the numerous reductions and remissions of assessment continued from previous years efficacious in reviving the prosperity of the cardamom growers, whose operations extend over an aggregate area of upwards of sixty thousand acres, of which, however, only a portion is actually cultivated.

The only other agricultural features of the year which call for notice are (i) the increased attention devoted to orange-growing and the cultivation of pepper, chiefly on or near estates formerly worked only for coffee, (ii) the fall to normal rates of the prices of the principal food-grains, and (iii) a reduction in the mortality among cattle. Seasonally, the period under report was on the whole normal.

For further extracts bearing on planting in Coorg, see page 744.

ECONOMIC PRODUCTS IN THE STRAITS.

EXTRACTS FROM ANNUAL REPORT ON THE BOTANIC GARDENS, SINGAPORE, FOR THE YEAR 1902.

PARA RUBBER.—The demand for seeds and plants of this fell off materially as many of the trees planted in the Native States and Malacca are fruiting now, and the planters are now supplying themselves. The number of seeds sold or otherwise distributed was 126,210 young plants. Owing to the drought the crop was very late and smaller than usual; experiments were made in tapping but were not completed as owing to the drought, the latex escaped very slowly and in small quantities. Experiments were made in manuring young plants in pots, with various kinds of manures, including lime, cowdung, burnt earth, poudrette, etc. The evidence, was in favour of burnt earth and cowdung; lime and poudrette seemed not to benefit the plants at all.

BRUCEA SUMATRANA.—This new dysentery drug was introduced to Singapore from Pahang in 1892, by myself, and its use in cases of dysentery described in the bulletin of this year. There was a fairly good demand for it, from varied parts of the world especially India, and a piece of ground was planted up with it. The shrub fruited in 6 months after planting, and grew very readily. A bag of ten pounds weight of seed was sent to Messrs Burroughs and Wellcome, for experiment.

Among the plants of economic value received during the year were two species of Anona from Mexico with edible fruit, Eugenia owariensis "Nsali" with eatable fruit, the Nyasa Land Coffee, and the "Masanda,"—an Artocarpus with edible seeds, and some Amomums from Uganda, the Rotan Segar, Calamus sp. from Muar, the best rattan in the Peninsula: Seeds of Bambusa spinosa, Dendrocalamus strictus and 16 bags of Swietenia Marcrophylla from Calcutta, Copernicia cerifera Wax Palm, from Guiana, Javanese vegetable seeds from Mr Cohen, American vegetable seed from U S A Department of Agriculture.

The chief demand for economic plants besides Para rubber, was for Fruit trees and Vanilla.

INSPECTION OF COCONUT TREES.

During the year notices to cut down infected trees were served on 238 persons and 1,039 dead trees and 35 piles of rubbish were destroyed. There were no prosecutions. The number of red beetles especially has greatly diminished in Singapore, so that it was sometime before I could get a couple for a correspondent in Madagascar who wished to see it.

FOR BOTANIC GARDENS, PENANG.

COCONUT TREE PRESERVATION.—The Inspector of coconut trees complains that in too many cases persons summoned for infringing the Ordinance are let off with a caution, or fined in so small amounts as to be non-deterrent. In view of the increasing importance of coconut cultivation, and the necessity for keeping the beetle in check, for which it has recently been found necessary to take steps in the Federated Malay States on the same lines as in the Colony, I think too lenient treatment is a mistake.

The number Notices, &c., issued are shown below

Name of District	No. of dead coconut trees destroyed	No. of pieces of Coconut Trunks destroyed	No. of heaps of Cattle Manure removed	No of heaps of Paddy-husks destroyed	No of Notices issued	Amount of Fines recovered $
Prov. Wellesley, N. District ...	480	2,770	168	89	383	15
Prov. Wellesley, C. District ..	149	1,089	103	54	185	83
Prov. Wellesley, S. District ..	49	231	35	22	85	Nil
Penang Island..	380	3,716	389	70	596	58
Total ..	1,058	7,806	695	235	1,249	101

PARA RUBBER.—Para Rubber still holds the field and bids fair to recoup Agriculturists some of the money that has been lost in other cultivations. The largest tree in the Waterfall Garden, of which mention has been made from year to year in annual reports, has been tapped for the seventh time, the yield of dry rubber being 2 lbs. 13½ ozs. which makes a total of 18 lbs. 7 ozs. from this tree in seven years, or an average of 2 lbs. 10 oz. per year; and I see no reason why this average should not be maintained or even exceeded without injuring the tree. According to a note in the Agricultural Bulletin, two of the oldest Para rubber trees in Perak that had not previously been tapped gave 50 lbs. of dry rubber at one tapping. Mr. Stanley Arden, Superintendent of Experimental Plantation Selangor, has just published his report on tapping of trees in various manners and at different ages, and I believe the conclusions arrived at coincide

in all material points with my own experiments, which though dealing with only a few trees have been spread over a much longer period. The extension of plantations is pushed on, especially in the Native States, and it is proposed to commence tapping this year on two Estates that I know of, but I fear that the return from very young trees will be disappointing after deducting cost of collecting.

RAMIE.—A short note on Ramie in the Agricultural Bulletin somewhat revived the interest in this fine fibre producing plant, and has resulted in eliciting some information that may be of practical value. A correspondent in Scotland who is thoroughly conversant with the methods of cleaning and preparing this fibre, and to whom a parcel of ribbons was sent for treatment, suggests that the kind we sent and which I believe to be the same that has been planted on the two or three estates in which the cultivation on ramie has been attempted on any considerable scale, is a very inferior variety which he terms black ramie. It is a very strong and quick growing form and on this account it has no doubt been selected in preference to others, but if our correspondent's views are correct this is its sole recommendation. We have in cultivation in the nursery here a smaller and shorter variety with hollow stems which will, I have little doubt give more than double the weight of fibre from an equal weight of stems as compared with the large growing kind. The nature of the stem too, I think, simplifies the decorticating process, for instead of stripping the bark from the wood which is never a complete process, there being always a certain amount of fibre adhering to the wood that cannot be removed with the bark, by simply beating the stems while in a green state and washing in water, every particle of fibre is obtained from this variety two pounds weight of green stems without leaves gave 4 oz. of roughly cleaned fibre which has been sent home to ascertain what further loss occurs in completing the process of preparing the finished article and the approximate value if shipped as per sample.

GUTTA PERCHA.—Gutta Percha trees growing in the Waterfall valley, from which a good crop of seeds was obtained in 1901, produced not a single fruit this year though one tree flowered freely. Import saplings both from Borneo and Sumatra are decided failures, and until seeds are obtainable the cost of forming large plantations is too great to justify the undertaking. This, however, is a matter to be dealt with more fully in a report on the Forest department which I have been asked by the Chief Forest Officer to write, and I merely refer to the subject here as the preparations of Gutta Percha plants for planting in the Forest reserves has hitherto been done in the Botanic Gardens.

C. CURTIS,
Superintendent of Gardens and Forests.

KANAN DEVAN HILLS, NORTH TRAVANCORE.

About 12 years ago, there was an account of a visit to these hills in the *Pioneer*. The country was then comparatively unknown and only a few estates had been opened out, principally with cinchona. This District known as the "High Range" is situated in the northern corner of Travancore near the British boundary, and is a portion of the Western Ghats from which it is separated by a barrier of precipitous mountains—the peaks of which are about 8,000 feet high, one of them, Anaimoody, being the highest point in South India —8,827 feet. These mountains shut in an area of about 300 square miles, consisting of hills and valleys ranging from 4,500 feet to about 6,500. Hidden amongst these hills are extensive forests, which until recently were the haunts of elephants and bison, whilst on the summits of the hills there are still large herds of ibex. Altogether there must be between 30,000 to 40,000 acres of forest, the remainder consisting of undulating grass hills and high mountain peaks. In every valley there is a small stream and the rainfall varies from about 250 to 100 inches, the portion lying to the west getting the full brunt of the south-west monsoon. About twenty-five years ago a concession for this District was obtained from the Travancore Government and was formed into a small company. A few experimental estates of

TEA, COFFEE AND CINCHONA

were opened out in different parts by the Company, and two or three independent planters also settled there, but owing to the inaccessibility of the place —it is even now 70 miles from the nearest railway station,—but few persons were attracted. Seven years ago, the whole of the concession was purchased by Messrs Finlay Muir and Company for a very small sum, about 65 per cent of the capital of the pioneer Company. A new company was then formed with a capital of £1,000,000 and operations were commenced on a very large scale. Altogether more than 13,000 acres have been planted out during this period, of which 11 000 acres consist of tea. The great drawback is the want of facilities of communication with the low country. Looking at the map the natural port of egress would seem to be Cochin, and although the western slopes of the Ghats present many engineering difficulties, it would have been quite possible to construct a road on that side. The Travancore Government, however, were not at first prepared to open a road, and have thus lost all chance of benefiting from the produce traffic which now finds its way to British territory. The two other points of egress from the planting district are to the north in the Coimbatore District, and to the west towards the South Indian Railway, running from Trichinopoly to Tuticorin. By the former route it is about 50 miles to the nearest town in the low country, Udamalpett, and from there as far again to the nearest station on the Madras Railway; whereas to the west it is only about 70 miles to Ammanayanaikanur, a station on the South Indian Railway. In both directions the only means of conveyance is by pack animals and cattle and the eastern slopes of the hills are so precipitous that it will probably never be possible to construct a cart road. By the route to the north it will be possible, and the Travancore Government has at last sanctioned and commenced a Ghat road to Udamalpett, to which town

THERE WILL SOME DAY OR OTHER BE RAILWAY COMMUNICATION

by means of a branch railway from the Madras line to the South Indian Railway. Some years, however, must elapse before this project is carried out and in the meantime the produce is for the most part despatched by the eastern route. The hills are almost entirely uninhabited except by Maliyalies, and the whole of the labour employed has to be brought up from the Madras side. Altogether about 10,000 coolies find employment on these hills for about 10 months in the year. The produce sent down amounts to about 3,000 tons annually and probably about an equal amount of rice and food stuff has to be brought up for the consumption of the coolies. To carry all this traffic by head loads and pack animals would be well nigh impossible, and therefore at a very heavy cost the Company has constructed a tramway from its headquarters station Munnar to

the top of the Eastern Ghat a distance of 22 miles. The line is on the Ewing Mono-rail system, each truck carrying one ton and drawn by a pair of bullocks. The gradient is a fair one (1 in 40), but whatever the cause may be, it does not give entire satisfaction, the balance wheel being said to cut up the road way so much as to involve more expenditure than a double rail would cost. The terminus of the rail is at a pass between the enclosing mountains and is said to be 6,000 feet above the sea. From here the produce is sent down rather more than 4,000 feet by a wire rope worked by a turbine from the bottom. The rope is in two sections, the power being applied in the middle station by means of two dynamos (the second being in case of any accident to the first). The rope, an endless one, working round vertically placed wheels at both ends, carries about 150 loads either way each day, each load being 180 lb. The loads revolve with the rope at the rate of two miles an hour and are fastened to the rope by an ingenious grip which fastens automatically on to the rope and is held in position by the weight of the load. When the load reaches the terminus at the end, it is met by a horse-shoe-shaped rail which automatically lifts the load off the wire and releases the grip. The wire is ⅝ inch in diameter and is capable of carrying 200 lb. At the middle station the two sections are connected by cog wheels, so that the load from one section can pass on to the other by the same contrivance. The turbine at the bottom is worked by a 9-inch pipe with a lead of about 1,200 feet and a fall of about 800. Here again there are double machines in case of accident, which are capable of working up to about 50 H. P. although the actual amount in use was only 20 H. P. From the lower terminus there is a cart road of 9 miles descending about 1,000 feet to the low country and from thence a good road 45 miles to the Railway Station of Ammayanaikanur. To construct this

TRAMWAY WIRE ROPE

involved an expenditure, I was told, of about £50,000 and it not only pays an interest on the capital expenditure together with all working expenses, but also effects a saving of about 4 pie in the rupee on what the cost would be by ordinary means of traffic. The great advantage, however, is that it makes it possible to get the produce away and to bring up the food supplies without having to depend upon coolies and pack bullocks. Of course, all the money spent in opening out this large area, and in the employment of labour has not been without advantage to the Travancore Government although the produce finds its way to British outlets. This is proved from the fact that the district, which was formerly an unproductive wilderness, is now made the headquarters of a Revenue and Magisterial official—a European officer,—and not only covers the cost of establishment but brings in a revenue of about R70,000 a year. All this productiveness, however, is at present confined to the forest land. There are at least 150 square miles of grass land which are absolutely unproductive and no attempt has been made to bring them under cultivation. It remains to be discovered what cultivation would be best suited to this land, but with a country so well watered, and so favourably situated for climate and rainfall, it should not be impossible to find a remunerative crop, and it would seem to be the ideal spot for a European colony. The district now

CONTAINS ABOUT SIXTY EUROPEAN PLANTERS,

including the Company's supervising staff and a few independent planters, survivors of the pioneers. Some of these are married and are scattered about the district in outlying estates, most of them beautifully situated as regards position. At the headquarter station Munaar there is a large tea factory, an association store, a club, and gymkhana ground. There is, moreover, a Volunteer detachment, and finally during my visit a Masonic Lodge was opened. The District has evidently a future before it and shows what can be done by the judicious employment of capital and energy. The original shareholders have, I was told, already received back in dividends and bonus about 60 per cent of their capital and now that the estates are coming into full bearing there should be a permanent dividend, though of course every thing depends upon the price of tea, which at present is the staple product. Given an average net profit of £5 per acre, which does not seem an extravagant estimate, the return from the estates already opened out should give 6½ per cent on the total capital. This is entirely apart from the latent possibilities of development and with improved facilities of communication and cheapness of transport there can be little doubt that there is a wide field open for further progress.—*Pioneer*, March 14. J. D. B. G.

PLANTING IN COORG.

(From the Official Report for 1902.)

As an indirect consequence of the depression in coffee, there has been a growing tendency to devote greater attention to the cultivation of rice. The extent grown with this crop (79,930 acres) expanded during the year by nearly two *per cent*, the harvest being a good average one notwithstanding an unusually long break in the monsoon. *Per contra*, dry cultivation, to which much less recourse is had in Coorg, diminished ; the total extent (14,512) acres), of which almost all relates to rági, was some 13 *per cent* less than in the previous year, when the area under this crop was materially expanded by the irregular practice of *kumri* cultivation which has since been prohibited.

There are two main outlets to the Western coast through the valleys of the Sampaji and Perambadi Ghats. The high roads to the ports of Mangalore and Tellicherry run through these passes, which about thirty years ago were covered with dense forest. This gave place to coffee. Coffee succeeded for a few years and failed, the rainfall being so heavy that it washed away the soil no longer protected by the forest. Lanthana (*lanthana aculeata*) a shrub introduced in 1863, has now taken the place of the coffee and has overgrown the sides of these hills turning them into an almost impenetrable bush.

The evergreen forests on the Western Ghats contain poon (*calophyllum elatum*), ebony (*diospyros ebnaster*), ironwood (*mesua ferrea*) cedar (*cedrela toona*), sampigè (*mischelia champaca*). Owing to their inaccessibility, these forests are very little worked. The right of cultivating or collecting cardamoms in them is leased out, the area of the leased blocks known as cardamom 'males' or hills being no less than 35,240 acres. The cardamoms (*elettaria cardamomum*) are grown in small clearings, the size of which is strictly regulated in order to prevent injury to the forest. There is but

little regular cultivation, and the growth is for the most part a spontaneous consequence of the clearance of timber and undergrowth and the breaking up of the soil. Bamboos are cut in the valley of the Cauvery and exported to Mysore. Fine clumps of a large variety are met with in the extreme south of Coorg near Kutta and the foot of the Sampaji Ghat.

To a considerable section of the population, the cultivation of cardamoms was formerly second in importance only to that of rice. During the last 20 years, however, the price of this product has fallen to such an extent that it now scarcely pays to collect the berries, and many well-to do families, who depended chiefly upon their cardamoms males for the purchase of articles required to supplement the produce of their rice fields, have been greatly impoverished.

Coffee is extensively produced in Coorg, and its cultivation forms the chief industry of the Province, every one, European and Native, being more or less interested therein. During the past decade however low prices combined with the ravages of leaf disease and borer have materially affected the industry with the result that many estates have been altogether abandoned and the majority hardly pay their way. The plantain (*musa paradisiaca*), of which there is a wild kind in the hill jungles, is commonly grown all over Coorg in the vicinity of native dwellings. The Coorg oranges are celebrated, and in South Coorg are as abundant as the plantain. Among dry grains the chief are ragi (*cynosurus corocanus*), awaré (*dolichos lablab*), togari (*cajanus indicus*) and horse gram (*dolichos uniflorus*); these are mainly grown in those parts of the Nanjrajpatna taluk which adjoin the left bank of the Cauvery.

The area shown in the statement under orchards and garden produce is made up of 281 acres arecanut and 2,165 acres of orange groves. The assessment ordinarily levied on orange cultivation, which has materially expanded of late years, is from As. 8 to Rs. 2 an acre. The expansion is attributable to the gradual decline in the interest taken in coffee planting. An incidental consequence of the same factor is the impetus given to the cultivation of pepper. No statistics are available, but it is an undoubted fact that considerable areas have been cultivated with pepper on estates formerly worked only for coffee.

Coffee suffered severely from unusually early blossoming showers as also from the reaction after the abnormally heavy crop of the previous year. The combined effect of these causes was an outturn roughly estimated at 2,250 tons, or little more than half the normal crop. The price of coffee revived somewhat from the low rates obtaining in the previous year, but the variation was so slight as to have no appreciable effect on the industry. The cardamom crop was also very poor; though slightly better than in the previous year, the outturn was only estimated at the normal figure, nor was there any compensatory improvement in prices.

PLANTING IN BRITISH CENTRAL AFRICA.

A FORTUNE TO BE MADE IN TOBACCO —AND TEA.

(? FOR LOCAL CONSUMPTION) AT 3s PER LB.

A young Ceylon planter, who recently went across to the Nyassaland Districts, sends us a chatty and cheerful letter from which we quote:—

25th January, 1903.—I arrived in Chinde after a fortnight's pleasant journey from Ceylon. The river Zambesi being so low, the paddle boat could not travel farther than the first Wooding Station, after which I had to go by small barge—no house boats being available. It took 10 long weary days from there to *Chiromo*. 13 natives paddled the barge, stopping at night time at different villages *en route*. The river got worse and worse until at Chiromo, I was told that I should have to travel by *Machilla team*:—that is, being carried by natives to Blantyre. I did not care for the idea, as the forests were swarming with lions, leopards and other wild beasts and only a short time since Mr Ray the Manager of Messrs Sharrer's Zambesi Traffic Company had a visit paid to his house by a full-grown lion. Well, I travelled all night through the forest—walking every now and again to stretch my legs; the natives meanwhile made as much noise as possible and imitated the lion to scare them away. They carry varieties of skins made into water bottles across their shoulders and run with great speed.

Thankful I was when "Chiromo" was reached after a journey lasting six weeks from the time I left Colombo. On the way up the Zambesi river I visited Mrs Livingstone's grave: she is buried near the Jesuit Missionary Station but they had not attempted to keep the grave in good order. It took 2½ days from Chiromo to Blantyre. The river has never known to be so low before by the oldest inhabitants and the river is swarming with Crocodiles and Hippopotami, but they did not prevent me from having my swim every evening coming up, a rather unwise thing to do, but after sitting huddled up in a barge all day in a sweltering hot sun one would risk anything, for a cool bath. I am 45 miles from Blantyre, up the hills and not far from Henry Brown, who used to be in Ceylon. Coffee, as you no doubt know, has had its day. Many firms have been ruined by it and are now all going in for *tobacco* and *tea* which pay a large profit at present. As for the land and soil, it is simply marvellous—not like Ceylon "clay", but rich dark soil. To give you an idea, the tea that Mr Brown planted two years ago I said at once when asked was "*five years old.*" Another Ceylon man who saw it said the same thing. The labour is so cheap I could hardly believe the wages the natives receive. As for the climate being made out to be so treacherous, that is simply ridiculous. Where I am at present is quite equal to Halton. The only thing is: food is very scarce; but when British Central Africa is properly known it will I am sure be the centre of Africa for growing Tobacco and Tea. Men with capital, not afraid to speculate out here, can I think make a fortune in a short time—very different from Ceylon in labour and competition. Although I was laughed at for coming over here to grow *coffee*, let me tell you at once that *coffee* is not reckoned on in future: *tobacco* and *tea* only. The tobacco grows here like a weed and I am planting 50 acres up this year and also *tea* is coming on splendidly, in fact better than I ever saw it in Ceylon. All that is required is machinery and that is coming as soon as enough tea is in bearing. At present I have to manufacture this estate's tea by hand and a steady sale is 3s per lb.—not *so bad.*

THE COTTON SHORTAGE: AND GROWTH IN NEW CLIMES.—Our weekly commercial report from Mincing Lane has been steadily urging the growing of cotton in Ceylon in view of the shortage of supplies to British sources. We should be glad to know if independent experiments are being made. It will be seen that Cyprus has sent some excellent samples, and that cultivation in that island is likely to be encouraged.

CINNAMON IN LONDON.

The particulars received by a recent mail confirm and explain the commercial telegram which we published, bearing on the first sale of the current year of Cinnamon held in London. The February auctions do not generally lead to much competition, as buyers lay in large stocks in anticipation of Christmas, which help the November sales. On the present occasion there were two reasons for expecting a good demand. The last quarterly sale of 1902 had a short catalogue—only two-thirds of what had been offered the previous November; and the offerings were all sold at advanced prices The second reason was that the total export of Quills for last year fell short of that for 1901 by about 200,000 lb. and since then the exports had been restricted. As a result, the quantity offered was exceptionally small —less than one half of that brought to the hammer at the corresponding sale last year; and yet the demand was slack, and the competition spiritless. With all that, there is not much to complain of in prices. Though "Worked" spice experienced a drop of 1d., it was from a point which had seldom been reached in recent years; and 1s. 5d. to 1s. 8d. for Firsts, and 1s 4d. to 1s. 6d. for Seconds, is decidedly good. What is more, the whole of the small quantity offered was sold under the hammer. Though about one-fifth of the "Unworked" Cinnamon remained unsold, the prices realised for its Firsts and Seconds were not only a penny higher than at the November sales, but also, we believe higher than "Unworked" had ever before realised. Altogether, the prices which ruled must be regarded as satisfactory, though the tone of the market was dull. It has not recovered yet from that state; and if prices are to be maintained the quantity produced will have to be moderate. But, after all, the United Kingdom now takes only about one-sixth of our Exports, Germany taking about double that quantity, though the best spice which the Island produces continues to go to London.

The Report of the sale from the leading spice firm, from whose notes we usually quote, will be found on this page.

COTTON IN CYPRUS.

The occasional shortages in the American supply of raw cotton have for some time past been the subject of a good deal of interesting discussion. The question of freeing the English mills from the exigencies of American speculators by substituting a supply of raw cotton produced within our own confines is an exceedingly important one; and the Government of several British colonies, notably of the Gold Coast, Lagos, and Sierra Leone, have professed a strong interest in the movement, and declared their willingness to undertake series of experiments with a view to the cultivation of cotton within their boundaries. This being the case, it is not a little surprising that Cyprus—a colony so near home, and one which has, moreover, for centuries been known as a cotton-producing country of no small reputation—should up to the present have been apparently overlooked. The Italian traveller and writer, Mariti, relates that as early as the 16th century, under Venetian rule, 30,000 bales, or 6,600,000lb., of cotton were exported annually from the island. Of more recent years the export has been much lower, but in spite of the depopulation and impoverishment of the island while under Ottoman rule, still eminently respectable. In 1865 it was put at 1,800,000lb., in 1866 at 2,065,000lb., and as late as 1871 at 1,120,000lb. Since the British occupation the yield has further decreased, the average for the first 12 years being 854,554lb., and for the last 11 years 550,664lb. This decrease is to be attributed to three causes—namely, (*a*) swarms of locusts, (*b*) scarcity of water, and (*c*) want of good seed, Thanks to the energetic action on the part of the island Government, which has spared no expense to benefit the country in these respects, locusts are at the present time practically extinct in the colony, and during the last two years large areas of cultivable land have been laid under proper irrigation. The want of good seed continues, however, to make itself felt. Mr John Butterworth, examiner in cotton manufactures to the City and Guilds of London Institute, in his report on some samples of cotton which were sent to the Indian and Colonial Exhibition of 1887, comments very favourably on the colour and staple of Cyprus cotton which he considers equal to the best Smyrna. Practical experiment has demonstrated that by a judicious use of American seed the staple of Cyprus cotton can be materially improved, and in irrigated lands the American varieties of cotton thrive far better than the native one—that is to say, they produce more and better quality of cotton. What is needed for a few years is new seed in sufficient quantities for distribution at a low price to native cultivators. Let but the Manchester Association devote a little attention to this object and in a very short time the output of Cyprus cotton will again reach a figure more than respectable, and the Lancashire market should experience no difficulty in securing practically the whole supply.—London *Times*, Feb. 23.

CINNAMON QUARTERLY SALE.

9, King William Street, E.C., London, 24th Feb., 1903.

CINNAMON.—The first auctions of the year were held yesterday, when the small total of 567b was presented, comprising 116b "worked" good and fine quill, and the remainder "unworked" common to fair medium. At this period last year 1,311b Plantation were offered and 1,178b in November last.

There was a fair attendance of Buyers whose requirements for the time being were apparently fairly all ordered, as competition was spiritless throughout, and only about 415b changed hands in the room and immediately afterwards.

The "worked" spice was all sold, but at prices about 1d per lb. lower on average than at the November sales. "Unworked" for some of the best marks ruled dearer for firsts and seconds, but cheaper for the lower grades.

"Worked" firsts 1s 5d to 1s 8d, seconds 1s 4d to 1s 6d, thirds 8d to 1s 4d, fourths 6d to 11d per lb. "Unworked" firsts 5½d to 1s 1d, seconds 5d to 11d, thirds 4d to 9½d, fourths 4d to 8d per lb.

CHIPS, &c.—947 bags offered and about 800 bags are sold at lower prices. Cuttings &c. up to 9d and good to fair Chips 3d to 2½d per lb.

BARK.—300 bags brought in. No bids at ¾d per lb. At the Spice Sales on 4th instant 1,301 bags "Wild Bark" were offered and cleared "Without reserve" at ½d to ¾d per lb.

STOCKS.—Ceylon	2,606 b	against	3,420 b	1902
Wild	1,817 b	do	2,282 b	do
Chips	1,801 b	do	2,318 b	do
Wild Bark	5,605 b	do	7,663 b	do

NEXT SALES, May 25.

INDIA AND THE CENTRAL ASIAN TEA TRADE.

Mr. G Macartney, British representative at Kaskghar. writes :—An examination of the Leh Office Trade Statistics for 1900-1901 would show that in that year the total value of the trade

carried on *via* Ladak between India and Yarkand had increased by about 1¼ lakh of rupees as compared with the previous twelve months.

Trade in Indian tea during 1901 02 does not strike one as having made any special progress—at least, if any has been made, it does not appear to have been proportionate to the general expansion of imports. The slackness is the more extraordinary because, as explained in this office 1900 1901 Trade Report, the quantity of Chinese tea, on account of transport difficulties in Kansu, has been diminishing in the market here, resulting in a gradual rise in price. The Indian tea brought to Yarkand last autumn consisted mainly of the three following sorts :—

'Green'—Forming about ⅜ of total import price at Palampur about 7½ annas a seer. All obtain from native gardens.

'Bohea'—Forming about ⅛ of total import Price at Palampur about 4 annas a seer. All obtained from native gardens.

'Black'—Forming about ⅛ of total import Price at Palampur about 6½ annas a seer. Partly from native, arp partly from Europeau gardens.

It may be noted from the above that whatever be the trade in Indian tea with this country, it is almost exclusively in the hands of native growers, the European planters of the Indian Tea Association having apparently only had an infinitesimal share in it.

Regarding the present demand for Indian tea, the following information given by traders may be of interest :—The 'Green' tea is mostly taken by the Chinese, and penetrates to regions as distant as Kuchar and Ili. This preparation is not in special request with the natives of Turkistan, who prefer the Chinese brick tea. Since, however, the latter has risen in price by reason of diminished supply, Indian 'Bohea' has gained somewhat in favour in Yarkand, where it is said a few Tunganis buy it up secretly, and mould it into bricks for native consumption. The reason why the 'brick' form is adhered to is that the people are accustomed to it, and that it permits of adulteration. A few maunds of Chinese tea, received *via* Bombay, came to Yarkand in the year under notice. The importation of this tea, though never large, has been a persistent feature in the Indo-Yarkand trade during at least the last decade. One cannot help remarking the sense of irony in the fact that, whilst our planters are trying to gain a market in these parts for their tea by competing with Chinese growers, our own traders should, all the while, assist the latter by importing the Chinese production.—*Indian Daily News*, March 17.

BORDEAUX MIXTURE.

Bordeaux Mixture if required for application to leaves or young branches should be made as follows :—*Materials.*—(1), 8 galls .water ; (2), 1 lb. copper sulplate (blue stone) ; (3), ⅜ lb unslaked lime *Directions* —(1). Put 7 gallons of the water into a tub, reserving one gallon to mix with the lime ; (2). Put one lb of blue-stone into a small muslin or cotton bag and suspend it by a string to a piece of wood placed across the tub, so that the bag with the blue stone is just a few inches below the surface of the water ; (3). Allow it to remain for about six hours or until all the blue stone is dissolved then remove the bag and pour in the lime which has already been mixed with the other galllon of water. The formula given in pamphlet No. 17 of the Imperial Department of Agriculture is as follows :—(1), six lb copper sulphate ; (2), four lb unslacked lime ; (3), fifty gallons water.—*N. B.*—When required for dressing the old stems of trees so that the leaves or young branches are not touched by it, the solution of copper sulphate may be stronger and sufficient lime may be used to make a thin white wash. This mixture is usefully employed when trees are attacked by any kind of fungus, and it has also been strongly recommended for the removal of epiphytic growths.—*Trinidad Bulletin* for October 1902.

THE CULTIVATION OF CASSAVA—ITS CONVERSION INTO SUGAR.

I think the public of Jamaica owes a heavy debt of gratitude to Mr Robert Thomson for the great revival of the interest which is now taken in the cultivation of cassava in this Island. His interesting pamphlet relating to what has been done in Florida has aroused a well-merited attention, which it is to be hoped will not be allowed to subside without profitable result.

In the course of my professional avocations, I see much cassava growing in what would appear to be its natural haunts, namely Clarendon and Saint John. The long continued dry weather in these districts, lasting from August through September into October—for the autumnal rains have not yet fallen—has caused a retardation in the maturing of the crop. Cassava should have come into the market fully two months ago, and the tubers that are now being lifted are small in size, and so stringy by the development of fibro-vascular tissue at the expense of the starch, that they are scarcely fit for the table, However, the peasant-women continue their preparation of starch, and this article will soon make its appearance in the markets.

Cassava starch is much undervalued in the island as an article of infant's food. Prepared with boiled milk it is highly digestible and should be freely given to young children. Mixed with even a small proportion of ground malt its digestibility is increased, and it then vies with more expensive articles that are much advertised. To make a market for this starch, it should, I think, be converted into starch-sugar, or glucose. There is a demand for glucose which the Americans have found out, for brewers use it in brewing ales and beer, and confectioners employ it in preserving fruits, in making pastry, barley sugar and other sweet-meats. In the very valuable work on Sugar growing and Refining by Messrs Lock, Wigner and Harland, there is a chapter of some twenty two pages on starch-sugar and glucose, giving very clear directions as to the different processes in use for its manufacture, some of which are very simple, requiring no great outlay for apparatus. The most simple apparatus is that known as Anthon's, Sulphuric acid and bone-black are required in the process, but the other substances we have here in abundance, namely, starch—produced more cheaply than corn-starch can be produced in the Western States of America—quicklime and chalk, the latter existing here in the form of white marl,

What follows is quoted from the work mentioned :—" In Anthon's method for producing three to four cwt of starch sugar per twenty-four hours, the ingredients for boiling are :—

370 lb of air-dry starch.

11 lb of sulphuric acid of 66 degree Beaume.

3 lb and seven-tenths of bone black.

2·46 to 3·70 lb of pure burnt lime.

4·95 lb of prepared chalk.

The apparatus is very simple. It consists of a boiling pan, a vat of about eight and half bushels capacity, with a wooden spigot at the bottom, a Taylor's filter in a case four feet high and two feet wide and deep, arranged for the reception of nine bags, each about two and half feet in length, and six to seven inches in diameter when filled, and set up so that the thin liquor can be drawn off into a cask. The bags are made of grey linen of prime quality and of uniform weft and are fastened over funnels placed in the bottom of a syrup-containing box with a strong cord." It is stated in America the cost of manufacture is about one cent (half pence) a pound. Some 26 to 32 lb are made from a bushel of corn. It is sold by the manufacturers at three to four cents one penny to twopence per pound.

The authors quoted also give directions for the preparation of starch-sugar on a larger scale by Anthon's process, which it is stated, furnishes excellent sugar. They also state that starch-sugar is principally used for manufacture of table-syrups, candies, as food for bees, for brewing, and for making artificial honey. All soft candies, waxes, and toffies, and a large proportion of stick-candies and caramel are made of starch-sugar syrup. Small quantities of starch-sugar syrup are used by vinegar makers, tobacconists, wine-makers, distillers, mucilage-makers, and perhaps for some other purposes.

All readers interested in the proper utilisation of cassava in Jamaica should consult the valuable work from which I have partially quoted.

Old Harbour, Oct. 25, 1902. JAMES NEISH, M D.

—*Journal of the Jamaica Agricultural Society:*

WEST INDIAN COTTON CULTIVATION

A RICH FIELD IN PROSPECT.

Sir Alfred Jones has just received from Dr Morris, of the Imperial Department of Agriculture, Barbados, a letter stating that they had already 600 acres under cotton cultivation in different portions of the West India islands. In St. Lucia, Antigua, Montserrat, and St. Kitts encouraging results have attended the experiments, proving that the West Indies offer a rich fields for cotton growing. The revival of interest in West. Indian cotton cultivation, like that of the West African, is very marked in Lancashire. Further larger shipments of American cotton seed have been sent to the Governor of West African colonies as well as to Sir F Lugard, who is displaying great interest in regard to cotton growing.—London *Times*, March 2.

RUBBER IN UGANDA.

In a report on exotic plants of economic interest in the Botanic Gardens at Entebbe, Uganda, Mr J Mahon states that while some plants make only moderate progress in this country, which in other parts of the tropics are known to grow very rapidly, still, it may be said that, on the whole, the things mentioned in the accompanying lists thrive most satisfactorily, and are eminently suited to the climate for either useful or ornamental purposes.

It is well known there are large areas in Uganda containing abundance of rubber vine (Landolphia) yielding excellent rubber, but as it is practically impossible to systematically cultivate this plant, we are introducing all the celebrated rubber-yielding trees with the object of demonstrating that this country offers a field for establishing rubber plantations on a commercial basis. As I have pointed out before, it is only a question of the activity of traders to determine the time during which our natural supplies of rubber will last, and as the same circumstances apply to other countries, where rubber is found naturally, it follows that timely preparations require to be made to furnish supplies for the demands of the future.

The standard by which all rubber is judged is the Para (Heavea brasiliensis). When I came to Uganda in 1901 the director of the Royal Botanic Gardens, Kew, forwarded in my charge a consignment of plants, amongst which were several sorts of Para rubber seedlings with stems about as thick as a lead pencil, and 9 in. to 12 in. high. One of these, in the Botanic Gardens, is now over 7 ft. high, and otherwise of proportionate growth. As I reached Entebbe for one of the worst droughts remembered here, the young plants, after a trying journey of almost two months, had a hard battle to exist, and some of them succumbed, so that the success of the survivals is all the more satisfactory to record. But as this Amazonian plant affects low levels, it remains to be seen whether our climate and elevation will suit it. I am certain the lake will exercise a very favourable influence, and it would, in my opinion, be a mistake to experiments with these and other extra-tropical plants elsewhere in Uganda than on the lake shores.

Castilloa elastica—Central America rubber—was another item in the Kew consignment. This also has done very well, and, being more or less of a highland plant in its native country, it is reasonable to assume the conditions here will prove suitable. A considerable quantity of Castilloa plants have been ordered, and an experiment in introducing its seeds here direct from Mexico is being conducted.

Ceara rubber (Manihot Glaziovii) is growing with its accustomed vigour. A seedling of eight months is nearly 4 ft. high. It seems quite at home in Central African climates, but it is not a first-class rubber, and instances are on record where it was proved not worth the trouble of planting, still it might be a most suitable sort here.

A serious loss occurred last June in the burning down of a large nursery shed through native carelessness, when a fine batch of the celebrated silk rubber of Lagos (Funtumia elastica) was lost, in company with other valuable things.

They were raised from seeds I received from the Gold Coast, and we were waiting for a rainy spell to plant them out. I am expecting more seeds by every mail. A few seedlings are doing very well, but a plant brought from Kew, which at first made good growth, has, for some reason, become leafless and refuses to move at present. I feel certain Lagos silk rubber will prove a suitable culture here for plantations in the lake region.

We have a large number of Landolphia seedlings which were obtained from Sesse in 1900. Nothing is more puzzling than the slow rate at which this common native plant grows under cultivation. It is quite clear it requires to be sown where it is intended the plants are to remain. It resents transplanting, and some seedlings we put at the base of trees in a stretch of forest to grow "au naturel" have remained practically as they were put out six months ago.—*India-rubber Journal*, March 2.

THE RAYIGAM COMPANY, LIMITED.

REPORT OF THE DIRECTORS.

Directors :—The Hon. Mr. Edward Rosling, Messrs. Albert Rosling, Gordon Frazer, F M Mackwood.

ACREAGE :

Rayigam.

Tea in bearing	.. ..	628 acres.
,, partial bearing ..	..	68 ,,
Rubber not in bearing	..	20 ,,
Forest	..	484 ,,
Total	...	1,200 acres.

Annandale.

Tea in bearing	.. ..	250 acres.
Forest	..	8 ,,
Grass	..	38 ,,
Total	..	296 acres.

The Directors herewith submit their Report and Balance Sheet for 1902. After writing of R4,000·00 for depreciation on buildings and Machinery there remains at credit of Profit and Loss Account R15,046 01. Out of this the Directors propose to pay a divided of 2½ per cent absorbing R15,000·0, carrying forward a balance of R46·01. The crop of Tea from Rayigam was 296,725 lb as against 294,110 lb in the previous year, and from Annandale 90,606 lb as against 85,929lb. In the case of Rayigam approximately about one-third of crop 99,355 lb. was made into Green Teas which netted 34·02 cts. per lb exclusive of the Cess bonus. The Black Teas netted 29·56 cts. and on Annandale 41·85 cts. per lb. A contraot has been made disposing of the first six months' crop of Green Teas from Rayigam Estate for 1903. The estimate of crop for the current year for Rayigam is 300,000 lb and for Annandale 100,000 lb.

Para Rubber.—About 20 acres were planted with Para Rubber during 1902. This, with what is already planted in ravines and through the Tea, gives an equivalent of 50 acres varying up to 10 years old. It is proposed to plant up about 20 acres annually. Mr. Albert Rosling retires from the Board of Directors by rotation, but being eligible offers himself for re election. The election of an Auditor for 1903 rests with the Meeting.

PORTMORE TEA COMPANY OF CEYLON, LIMITED.

ANNUAL REPORT.

to be submitted at the sixth annual meeting held at 24, Rood Laue, London, E. C., on Monday 16th March.

The Directors have the pleasure to submit the General Balance Sheet and profit and loss acconnt for the year ending 31st December, 1902, duly audited.

The net amount at credit of profit and loss after providing for general expenses, income tax, &c. £3,930 6d 9d. To which should be added balanoe brought forward from last year £260 5s 11d.—Total £4,190 12s 8d.

An Interim Dividend of 5 per cent. was paid October 18th, 1902, amounting £2,000. It is proposed to pay a final Dividend of 5 per cent. (making 10 per cent. in all, free of Income Tax) which will absorb £2,000. And to carry forward to next year £190 12s 8d.—Total £4,190 12s 8d.

In presenting their sixth annual report, the Directors have pleasure in recommending a dividend of 10 per cent. for the year ending December 31st, 1902. The Tea crop from the Estates has been 221,143 lb. being at the rate of 472 lb per acre, which is the smallest yet obtained, and is acoounted for partly by the system which has been carried out of leaving a portion of the area nuplucked, and partly by excessive rains in the latter months of the year, which prevented the usual flushings.

The cost of production has been £4,071 15s 5d, being at the rate of 4·42d per pound, and the crop his netted £8,459 5s 10d, being 9·18d per pound. The average rate of exchange has been 1s 4 3·16d against 1s 4 3-32d last year. Mr W Herbert Andersen retires from the Board by rotation, and being eligible offers himself for re-election.

The latest reports from the manager in Ceylon show that estates, buildings, and machinery are in good order, and the estimates of crop and expenditure give promise of continued good results. The directors feel that great credit is due to Mr R C Grant, the manager, and Mr H A Grigg, the superintendent in Ceylon, for the way in which they have cultivated the estates and maintained the high quality of the tea during the past year.

THE TONACOMBE ESTATES COMPANY OF CEYLON, LIMITED.

REPORT OF THE DIRECTORS.

Authorised Capital ..	..	R600,000
Subscribed and paid up	...	280,000

Directors :—Hon. Mr. J N Campbell, Messrs. G H Alston and R S Templer. Agents and Secretaries:—Messrs. Cumberbatch & Co. Estate Superintendent: —Mr V Vicaresso.

ACREAGE.

The acreage of Tonacombe Group is as follows:—

Tea in bearing	..	582 acres	
Tea not in bearing	..	8 do	
Tea seed bearers	...	3 do	
			593 do
Cardamoms in bearing	..		98 do
Reserve Forest	..		24 do
Fuel Trees	...		20 do
Chena and Patna	..		1,142 do
Total	..		1877 aores

The total quantity of tea secured for the year was 214,566 lb being 14,566 lb in excess of the estimate. This was sold at an average of 35·63 cents per lb. as against 37·84 censt per lb. last year. The cost of production was 25·84 cents per lb. as against 26·50 cents in 1901. The cardamom crop was disappointing, the quantity secured being only 6,308 lb. Of this 4,220 lb. have been sold at an average of R1·07 per lb., and the balance is estimated in the accounts to realise 75 cents per lb. In 1901 a net average of R1·48 was obtained. The total expenditure amounted to R69,931·07 and, as in the previous year, there has been no outlay on capital account on Tonacombe Group. The balance available, after providing for depreciation on buildings, and including R5,004·38 brought forward from last season's account, amounts to R28,296·51, and the Directors recommend the payment of a dividend for the year at the rate of 5 per cent on the paid up capital of the Company absorbing R14,000, the writing off of the balance standing to the debit of Buildings Account R5,654·06 and the carrying forward of R8,642·45. The Directors have pleasnre in stating that the Debenture debt has been further rednoed by £500 during the year. An opportnnity arose towards the end of the year of acquiring the Kalugalla estate consisting of 146 acres of tea, and about 227 acres of patna, &c. The Directors being of opinion that the purchase of this estate would be to the advantage of the Company decided to acquire the property at a cost of R17,500. Financial arrangements necessitated the payment of the purchase money by the last day of December, 1902, and the estate was taken over on the 1st January, 1903. The Coast Advances on Tonacombe Group stand at R3,116·34 on 31st December, 1902, being a slight deorease on this account since the same date in 1901. To meet the requirements of Kalugalla the labour force on that estate was taken over, and R1,846·70 has been advanced to meet their debt. The crops for 1903 are estimated at 210,000 lb tea from Tonacombe Group; 56,000 lb tea

from Kalugalla Estate ; 6,000 lb cardamoms, against an Expenditure of R85,498·70. The Hon Mr W H Figg resigned his seat on the Board on leaving the island, and Mr G H Alston was appointed in his place. Of the Directors the Hon Mr J N Campbell retires by rotation, but is eligible for re-election. The appointment of an Auditor for the current year will rest with the meeting.

COLOMBO COMMERCIAL COMPANY, LIMITED.

REPORT OF THE DIRECTORS

presented to the eighth general meeting on Tuesday, the 17th March, 1903 :—

The Directors have pleasure in placing before shareholders the profit and loss account for the year ended 30th September, 1902. Balance sheet made up to 30th September, 1902.

The above accounts shew the following figures :—

Profit for the year after debiting all charges, interest on debentures, &c..	£ 7,999	11	7
Add balance brought forward from last year	2,023	13	5
	£10,023	5	0
Less transferred to reserve fund ..	1,500	0	0
Amount available for dividend, &c.	£8,523	5	0

Interim dividends, of 3 per cent. on the preference capital and 2½ per cent. on the ordinary capital were paid on the 15th September, 1902, and the Directors recommend that the following dividends be now declared, viz. :—3 per cent. on the preference capital, making 6 per cent. for the year, and 5½ per cent. on the ordinary capital, making 8 per cent. for the year, the latter free of income tax.

After payment of the above dividends there will remain a balance of £1,832 3s 0d, which the Directors propose should be carried forward to next year.

The liquid assets in Ceylon appear in the Company's accounts at the same exchange as in last year's balance-sheet, viz. :—1s 1d. per rupee.

The general reserve fund stands at £7,000, including the amount transferred in the present accounts.

Hatberleigh estate, one of the Company's tea properties, has been sold, and its cost has been deducted from the amount at which those assets were represented in the last balance sheet.

Mr. P C Oswald, a member of the Board, retires from office on this occasion, and, being eligible, offers himself for re-election.

Messrs. Deloitte, Dever, Griffiths & Co., the Auditors also offer themselves for re-election.

TEA IN NATAL.

PAST AND PRESENT.

(*By "Planter."*)

I was much struck with the article on the "Natal Tea Industry" by "Nemo," in your issue of the 26th ultimo. Wholesome criticism from those who have been connected with industries attempted in Natal will at least show those who have the conduct of these affairs that there is still room for improvement in their products, while the facilities of climate, labour, soil, and proximity to markets are nine-tenths as great as the countries whence the whole world has obtained its supply for a century.

No Indian or Ceylon tea-maker would accept the carelessly-picked leaves that are sent in from the field here, and the class of machinery will have to be very much improved, and looked after by experienced men, before Natal can approach the standard these other countries attained ten years ago. I do not mean to say that it will take ten years to attain this standard—it need not take ten months—but both the field and the tea-house must be under the control of competent men, and your field will then produce more and your machines will turn out better quality. What "Nemo" has pointed out was patent to me when I came to Natal three years ago, and I have had the opportunity of comparing notes with the sons of brother planters from India and Ceylon who have been brought up on tea and coffee estates, and know their business thoroughly : and they have gone back with little fear of any competition from Natal while the present state of things lasts.

(To the Editor of the "Natal Mercury.")

Sir,—With "Nemo's" article on "Natal Tea," as a planter of long experience with one of the largest tea companies in Assam, I fully agree. Natal planters will not have an experienced Assam, Indian, or Ceylon planter on their estates as I found to my cost when I arrived, thinking that with long and up-to-date experience and first class references I should have no difficulty in obtaining a billet. I was offered the handsome salary of £8 per month ! Having a trade to fall back upon, I preferred to work at it, rather than give my experience and knowledge for such pitiful competence. The methods of pruning and plucking, as described by 'Nemo,' would not be tolerated even on a native garden in Assam, and might well be described as murdering the bushes. To hack at a tea bush with the 'largest size pruning knife available' can only result in a large percentage of the 'new wood dying back,' and forming knots, which it should be every planter's object to do away with. Plucking eight leaves and a bud is absurd, as the lower end of the shoot will have formed 'wood' by the time eight leaves are out, and it is not usual to make tea out of wood, although, of course, it will make up the bulk, and help to swell the quantity. Tea, with the quantity of 'sticks' that most Natal teas show, would be almost unsaleable on the London market. I have before me some Natal tea, styled 'Pekoe'; it should be styled Pekoe Souchong, a much inferior grade. Pekoe should be a clean, whole-leafed tea, free from 'sticks' and red leaf, and with a few 'tips'; this is partly made up of sticks and red leaf, the balance being a broken and coarse Souchong leaf—it would not be considered on the London market even a fair Pekoe Souchong. 'Nemo' is quite right in stating that, by plucking two or three leaves and a bud, the quantity is not sacrificed ; this has been proved by experience, and the old custom of plucking four or five leaves and a bud has long been discontinued by up-to-date planters.—I am, &c.

ASSAM PLANTER.

RETURN OF MR. T. FAIRHURST FROM THE STRAITS.

RUBBER TAPPING FROM PARA TREES.

We have have to welcome back Mr. T Fairhurst, the well-known proprietor of St. Andrew and Ferham estates, Dimbula, who arrived by the P. & O. "Valetta" yesterday after a visit of some weeks to the Straits. Mr. Fairhurst goes up to Ferham on Saturday and will leave for Europe in about a fortnight's time—probably by the Bibby ss. "Lancashire" on April 7th.

In a conversation with Mr. Fairhurst today we learn that he had been seeing a good deel of rubber in the Straits and was everywhere struck with the fine growth displayed. He had not, however, seen rubber growing in Ceylon and so could not institute comparisons. Mr. Fairhurst assisted at the tapping of a specimen Para tree which was 32 inches in circumference, 3 feet from the

ground, and 5½ years of age. The incision was made at a height of about 4 feet (the height of the first branch, we may mention, was nearer 7 feet!), in a V-shape, and the rubber latex flowed freely into the cup fixed at the foot of the V. Making the incision in this fashion, one gets the rubber to flow well and the cut does not dry up quickly. Another common method is the herring-boning, in which a long central cut is made, perpendicularly, and then parallel incisions are made sloping into the central one; but in this case the channels are found to be too small and numerous and to dry up too quickly. The ideal instrument for making the incisions has yet to be found and something of the nature of a chisel has been mostly used so far; the tool should be a sort of gouge that would be pulled rather than pressed along the line of incision, the sharp portion being just deep enough to pierce the bark (which shall pass under the knife blade as it is cut) and not injure the inner wood. There is another kind of chisel-knife, with a double handle which is pulled along in cutting the bark; from its make it requires less energy to handle. It is from the bark, of course, that the latex flows.

DOCTORING TREES.

A new method of feeding trees and plants without the agency of the roots has been discovered by the well-known entomologist M S A Mokrshezki, who has explained his discovery in a lecture before the Imperial Botanical Society. He has invented an apparatus by which he can introduce into the stems of apple and pear trees salts of iron, either in the form of a solid or in solution. The effect of the chemicals is, on the one hand, completely to cure the tree of chlorose and on the other, to stimulate its growth in an important degree. Among other extensive researches the scientist has applied his theory to 800 fruit trees growing on the southern shore of the Crimea. By introducing dry sulphate of copper into the stems he produced an unusual development of the trees, as many photographs testified. M Mokrshezki considers that in this way the size of a fruit tree can be increased, its colour improved and varied, and its diseases removed. The discovery opens up a wide field of practical utility, and is regarded as most important.—*Indian Daily News*, March 26.

RAINBOW TROUT IN CEYLON.

(To the Editor, *Indian Field.*)

SIR,—Can any of your Ceylon correspondents furnish information of the success or otherwise attending the introduction of "Rainbow Trout" into the Island? Up here in South Sylhet we have small streams admirably suited for trout of all kinds, and on the northern side of the valley there is a pretty little fellow running about 2 to 2½ lb; a true trout. The upper part of the body is light sepia coloured, the under silver, but where these hues blend into one another there are three, sometimes four, longitudinal streaks of bright blue spots; the upper part is also speckled but with darker spots than the back ground. It is a handsome fish generally found in bright pools: can you identify it? It will rise to the black fly but a spoon or anything bright or glittering is ignored. Is this the rainbow?

Mulvee, 9th March 1903.

—*Indian Field*, March 26. PISCATOR.

FINE GROWTH OF PASPALUM GRASS.

An interesting record of Golden Crown grass (Paspalum) growth is contributed to the *Gosford Times* (New South Wales) by a correspondent, who writes:—"Off 30 square yards land under the above grass I took 150 lb. of dried hay (which would be nearly 11 tons per acre), being the second cutting this season, and will probably get as much from the third cutting. This piece of land has never been manured. What other grass is there in cultivation will do as much and then keep green all through the winter? Granting that this particular piece of land is well suited for it, say, that an average acre of land would produce 3 tons per cutting—3 cuttings per season, 9 tons—which any ordinary land about Gosford can do, why grow couch? Both grass and hay (chaffed) are well suited for the cattle, improving the milk and butter yield."—*Melbourne Leader* March 7.

MALARIA AND MOSQUITOES.

GOVERNMENT COMPETITION: BOMBAY PRESIDENCY.

Bombay, March 19.—In accordance with a recent Government Resolution requesting the Surgeon-General with the Government of Bombay to furnish detailed proposals to give effect to the wishes of the Government of India that measures should be organised by private enterprise for the prevention of the spread of malaria by mosquitoes, a statement on the subject is published in today's Government *Gazette* in which the Surgeon-General points that whilst all Civil Surgeons express their readiness to promote organisations for the destruction of mosquitoes, so far as their time and opportunities will allow, the majority report that the collection of funds for this purpose from Municipalities or private individuals is uncertain and that they cannot hope to arouse much interest in the matter on the part of the inhabitants. On consideration of the views expressed by the Surgeon General, the Government of Bombay have decided to offer four prizes of R400, R300, R200 and R100, for a year's observation on the distribution and habits of mosquitoes in any of the towns and villages mentioned in the Surgeon-General's letter. The competition is not restricted to Government servants.—*Pioneer*, arch 21

THE CAMPHORTREE IN HUNAN.

March 10.—Formosa, which has hitherto been the chief supplier of the world in regard to camphor, will soon have a great rival in Hunan province. the soil of Hunan has now been found to be well suited for the extensive cultivation of the camphor tree, and the inhabitants are enthusiastically planting it everywhere they can. A Ch'angsha, capital of Hunan, dispatch states that there are innumerable camphor trees several feet in diameter in the porovince and it is expected that with care the province will soon be able to export annually several thousand piculs of the stuff.—*N. C. Herald*, Mar. 12.

THE PASTEUR INSTITUTE, KASAULI.

We have received the report of the Director of the Pasteur Institute at Kasauli for the second year ending 8th August, 1902 (Punjab Government Press: Lahore). There were 543 patients treated during the year, as compared with 321 in the first year. Of these 543 patients 215 were Europeans and 328 were natives. As regards the latter, Major Semple, the Director, remarks, "I believe every caste in India was represented;" and he apparently means every main Hindu caste, as well as Mussalmans, Sikhs and others. This is the only loose statement in the Report; and in view of the prejudice against anti-rabic treatment still prevalent amongst the Indians it would be as well, we think, if in future Reports a list of actual castes and nationalities were given, as an object lesson. As regards results of the treatment there were only five failures (all natives) or 0·92 per cent of persons treated. In addition, four patients (three Natives and one European) contracted hydrophobia within 15 days after the last inoculation, and two patients (both Natives) during treatment. The European referred to was a lady in a delicate state of health, severely bitten on the upper lip, nose and cheek, and who came late for treatment. The Report remarks:—"It cannot be too forcibly impressed upon persons bitten by rabid animals the very great importance of early treatment, especially if the bites are multiple, or severe, or situated on the head or face." This emphasises the need for another Institute in Southern India; and it is satisfactory to know that this will soon be an accomplished fact, thanks to the beneficence of Mr. Phipps. It should then be possible for every patient in India to come under treatment before the fifth day. The Report makes an urgent plea that the Railway Companies should grant free return passes for. While 436 of the cases last year were from dog bites and 99 from jackal bites, there were also five from horse bites and three from cat bites.—*M. Mail*, March 24.

A CAMPAIGN NEAR LAHORE.

Lahore, March 20.—Endeavours have been set afoot in the cities of Gujranwala and Gujrat to suppress malarial fever by an organised campaign against mosquitoes. Hollows in the ground have been filled up to prevent accumulation of stagnant water, and water-holes, drains and malarious spots treated with kerosine oil. Larger drains are being flushed with phenyle. Huge swarms of both full grown insects and *larvæ* are reported to have been destroyed. —*Pioneer*, March 22.

INDIAN COOLIES PROSPER IN TRINIDAD.

737 BRING £10,000 IN SAVINGS.

An extraordinary instance of the prosperity of Indian emigrants in suitable Colonies has just been furnished by a shipload of these people who returned to Calcutta on the 24th February by the steamer "Mersey" from Trinidad. There were 737 returning emigrants on board, and they landed bringing nearly £10,000 in drafts, coin and jewellery. State-regulated emigration to Trinidad has gone on now for upwards of half a century: and the carefully kept records disclose to fact that since 1851, when the first Indians began to come back, the returned emigrants have brought with them saving to the value of £386,000 actually declared. This is, of course, merely what they have carried back on their persons and in their pockets, and takes no note of the large sums that are remitted to India as they are saved. It is unfortunate that the Indian cultivator and labourer cannot do in his own country what he does in Trinidad, Mauritius and Natal. But before he will turn high wages to good account it seems necessary that he should be transplanted away from his village, his caste folk and all the influences which conspire to keep him in the traditional rut. Remove him from these and start him in a new country, and from Coolie to Crœsus it is but a step, or at any rate a matter of few years.—*Pioneer*, March 18.

NEW ZEALAND TROUT FISHERIES.

Captain G D Hamilton, president of the Hawke' Bay Angling and Shooting Club, writes as follows on some points raised in a recent *Times* article on the above subject:—

1st. The anglers in the colony are not a few persons, they are thousands. They are not a class, and are chiefly working men, who, when they care for the sport; can for a small fee, necessary to keep up the supply of fish, have a recreation for seven months of the year which relieves the monotony of their work-life and gives them a variety of food. In Scotland nearly the whole of the rivers are open to the trout-fisher. There are in thousands working men living near rivers, who take care that their sport is not destroyed by the trout poacher and netter. Anglers are not always amateurs in knowledge; some of them have more general knowledge of the habits of fish than any of the people employed about fish hatcheries. I fancy few of the experts, have much, if any, experience of fish or game in the countries from which they have been imported. The anglers serve the useful purpose of keeping up the interest in acclimatisation, which is otherwise apt to flag. Were it not for the anglers, I question if there would be trout in New Zealand waters now. All this has been done at the private expense of the acclimatisation societies and anglers, who have worked without pay. I turned out trout in the North Island about 1870. This enables the Government now to invite tourists' to enjoy the sport thus provided—a very commendable project for the benefit of hotelkeepers and others, and for utilising about one-third of the country too sterile for industrial occupation.

2nd. It is argued that, under proper restrictions, netting can be done without injury to the rivers and lakes. I am aware that netting has been sanctioned in lakes, and it has been under certain restrictions. Who has ever seen these restrictions carried out, or who is going to see them carried out if amended restrictions are passed? I predicted when netting was sanctioned in Lake Wakatipu that it would ruin the fishing of the district. The lake is now hardly worth netting. It is not a well-known fact that the sanctioning the netting of Lake Wakatipu for fish for sale has caused all the rivers running into it to be cleared of fish and the rivers and lakes to within seven miles of Dunedin and Invercargill to be poached for fish and sold in those towns as Lake Wakatipu trout? Rotorua is an instance of the same kind. Allowing occupiers of land to fish without a license will be found to be very troublsome, particularly in native districts. So far the Government has not been in a position to protect the rivers and lakes, which would entail a lot of supervision, quite out of the power of the police, even in easily accessible places, but of course they can help. It is a quarter or half a century too soon for legalised netting of fresh-water-going fish in this country. Except in a few rivers, the brown trout, bull trout, sea trout (salino trutta) and salmon are barely established. The sea-going trout travel round the coast, thus stocking rivers and lake

that have been considered too inaccessible so far to stock in the ordinary way. If netting for trout is legalised in salt or breakish water, this supply for stocking the rivers naturally with a large breed of trout will be much reduced, and the stocking of the whole country retarded. It is not possible to avoid taking trout occasionally when net-fishing for other fish off the coast or in the estuaries, but it is possible to return a great many alive to the water, and it is better to try this with some failures. I have for the last few years returned more than three-fourths of the trout of all sizes I have caught on the rod to the water, and not one has failed to recover and swim away. Among these were seven-pound fish. I did not want them. It is quite common to over-fish a stream without using nets. The rivers of this country have become celebrated for their large sea-run trout. This is because there has been no organised netting for trout in or about the estuaries or lower parts of the rivers. The sea-run trout (not salino trutta or salino salar) in some of the North of England and Scotch rivers are just as large and in great number, but the salmon nets prevent nearly all of them ascending the rivers until close time, when it is illegal to take them, and so many anglers hardly know of their existence. I have caught them in the Tweed (Scotland) up to eleven pounds, and have seen them caught twenty pounds weight in the same river. Lately I saw a trout of 39¾ lb. had been taken with a salmon fly at the outlet of a Scotch lake. I am not quite a novice in net and sea fishing. I have been through it all from herring to cod.

More caution should be exercised in allowing insufficiently informed people to deal with these things. The introduction of the poorest of anything that can be called game—the rabbit and other pests—has ruined the game shooting of the whole country. Now we are having 'white fish' introduced to our lakes already stocked with trout. They can only be taken in nets, so that if they are to be taken at all the trout must be netted. It is quite a different thing to accept and make the best of these things, where Nature has placed them, and to introduce doubtful things to a country in which they are not indigenous. A much more valuable fish for the table than the 'white fish'" and a freer riser than the brown or even rainbow trout, in lake or river connected with the sea, is the white trout (salino trutta), and much more likely to remain on our coasts than the salmon.—*New Zealand Mail*, March 4.

GIANT LAND-TORTOISES.

"In the long-past days when the plains of India were the home of the mighty sivatherium and of still more gigantic elephants and mastodons, while its rivers were tenanted by hippopotamuses and huge long-snouted, gavial-like crocodiles, that country was likewise inhabited," writes Mr. Lyddekker in *Knowledge* for March, "by the most gigantic land-tortoise of which we at present have any knowledge. When fragments of its fossilised shell and more or less nearly complete specimens of its limb-bone came under the notice of its original describers it was thought, indeed, that they indicated a creature of truly colossal proportions, the length of the shell in a straight line being estimated at no less than twelve feet three inches. In a restoration of the shell made under the superintendence of the discoverers of the species, and still exhibited in the geological department of the Natural History Museum, the length was reduced to a little over eight feet. But even these reduced dimensions appear to be considerably in excess of the reality and it is probable that the maximum length did not much exceed six feet. A shell of this size vastly exceeds, however, that of any modern land-tortoise, so that the Siwalik tortoise, or 'Testudo atlas,' as it is scientifically called, is fully entitled to rank as the real giant of its kind. . . . In modern times the islands most famous for these tortoises are those of the Galapagos group, which take their title from one of the Spanish names (ga'âpago) for a tortoise, and are situated on the equator, a comparatively short distance off the western coast of South America. All the other 'tortoise-islands' are in the Indian Ocean, where they lie (with the exception of the lower extremity of Madagascar) within the southern tropic, off the African coast. . . . In the Aldabra tortoises the only member of the group surviving in a wild state in its native habitat is the South Aldabra 'Testudo daudini.' A male of this species, received by Mr. Rothschild in 1897, is the largest known example of modern giant tortoises, the length of the carapace in a straight line being no less than 55 inches, or only 19 inches short of the length assigned to that of the extinct T. atlas."

NILGIRI PLANTING NOTES.

TEA PLANTERS FROM ASSAM.

A group of estates near Colacumbay has just been sold to two tea planters from Assam. The properties consist of the Terramia, Pembroke and Carshalton estates, comprising about 600 acres of land, of which about 200 acres are under tea and 100 acres under coffee. It is said that the purchasers intend to open out all the uncultivated land in tea and make a big concern. It is significant that planters long resident in that well-known tea-producing District should leave it to settle on the Nilgiris, and one is inclined to seek the reason. It must be that the labour difficulty in Assam is preventive of any profits being made in these times where large advances have to be made to the coolies, R75 per head and even more, and where Government interference is so irksome. The planters here will no doubt hail the advent of these newcomers as they will be sure to carry out economical methods and keep down the rates of pay which have a tendency to rise of late years, and would undoubtedly run high but for the fall in prices.

NILGIRI TEA.

Nilgiri tea is noted for its peculiar aroma, is delicious when used alone, and is bought by dealers to make a blend with the coarser-tasting tea, grown at a lower elevation, to give it flavour. Some good sales have taken place lately, the average from one estate realising as much as 9d a pound, a very remunerative price if the yield is fair.

SALE OF THE MOYAR ESTATES.

The Moyar coffee estates belonging to Lady Souter, have just been bought by Mr E G Windle at a figure indicative of the low prices.—*Madras Mail*, March 28.

GREEN TEA MACHINERY AND MANUFACTURE.

(To the Editor, "Indian Planters' Gazette.")

SIR,—I thank you for your complimentary mention of my name (on page 272 of your issue of 21st February) in *re* the bringing about of what promises to be a solution of the problem of over-production of "black teas."...I now claim that we have solved the problem of Panning and Finish-

ing by machinery—the mere finishing by friction being an old and well known process often used in America and Java, but this though it gave the appearance, did not give the flavour or keeping qualities of the panned article. "Black tea" prices are up, thank goodness, but to keep them so, it should be the endeavour of every company to foster and promote the manufacture of "True" Green teas on such gardens as, owing to forcing climate and heavy flushes, cannot hope to stand out for special *strength* and *flavour* as Black teas. If India can dispose of ten to fifteen millions of Greens, and Ceylon a like amount, at remunerative prices, so surely will a better day dawn for Tea Companies and Proprietors. In conclusion I may state that the only two points, in which India, at any rate, is behind China and Japan, are firstly the rolling of "gunpowders," which is affected in China by foot-rolling in bags, and secondly the "polishing" of coloured teas, which in China and Japan is done with "soap stone," both these processes we hope and intend to adapt existing machinery to with but slight alteration. —I am Sir, Yours faithfully,

HORACE DRUMMOND DEANE.

Stagbrook, Peermaad, S. India, 16th March, 1903.

P. S.—Owing to complications of a business nature, by which my crops were hypothecated to London, I have had to abstain from making Green Teas on a large scale. These troubles, through the courtesy of my London Agents, Messrs. Rowe White & Co, are now removed, and I hope from July next to have a full installation of green tea machinery at work, including a novelty in boilers of the "Flash light" type, that are not only extremely portable but expensive, costing about £25 f.o.b. This is a most important item in the expense of an installation, to such Estates as have not "Steam power" as their motor.—*Indian Planters' Gazette*, March 28.

CONDENSED EGGS.

When condensed milk was introduced it was looked upon as a curiosity by the public, but it has become a staple article of food now, and milk factories exist in the agricultural districts for collecting the milk from the farms and condensing it at once; by this means much of the prejudice against condensed milk has been overcome. Eggs are used in enormous numbers in this country, and somewhere about £7,000,000 represents the annual value of eggs imported into Great Britain. When an abundance of eggs can be procured in the summer they quickly go wrong and many methods have been suggested for preserving them, but these all entail some trouble and small expense, and the public do not care for preserved eggs. For some years now eggs have been deprived of their shells and a preservative added, liquid egg is an article of commerce for manufacturers, but hardly suitable for domestic use. The Condensed Egg Syndicate, Limited, have, however, overcome the difficulties which beset the question of preserving eggs, and supply egg in a condensed form mixed with sugar as a preservative. We have examined the product, and find it contains all the constituents of ordinary fowls' eggs, and further, we are able to state that it is in an excellent state of preservation, and free from organisms which would induce decomposition in keeping. The product is about the consistence of treacle, and is supplied in hermetically-sealed glass jars. Like condensed milk, it will remain good as long as it is unopened, but when once opened it should not be closed up again. Three forms of the preparation can be had for domestic purposes—(1) the entire contents of the egg; (2) the yolks only; (3) the whites only; and the uses of these are as unlimited as those of fresh eggs. For pharmaceutical purposes condensed egg and extract of malt ought to find a ready sale to replace the preparations with cod-liver oil for patients who cannot take the latter. In the preparation of emulsions the condensed yolk ought to find a wide field of usefulness. Emulsions of petroleum, hypophosphites and egg, or cod-liver oil and egg, would be useful adjuncts for retailers; while, for prescribing purposes, equal parts of port wine and an entire egg should be of especial value to invalids when given in suitable quantity. A tablespoonful of the condensed egg represents one entire fresh egg, and it can be used without any doubt of its freshness or soundness.—*British and Colonial Druggist*, March 6.

INDIAN COMPANIES AND GREEN TEA.

We note from the accounts of the North-Western Cachar Tea Company now published that green tea did pretty well for the Company last year. Out of a total of 318 645 lb. of tea manufactured, the proceeds of which totalled R89,416, the amount of green tea made was 145,108 lb. producing R44,936 and black 173,537 lbs. producing R44,480. The average price of green tea in the above account works out to 4 annas 11½ pies per lb. against 4 annas 1¼ pie per lb. for black. Another Company which shows good results from having undertaken the manufacture of green tea last year is the Manabarie Tea Company. Out of a total of 247,944 lb. manufactured, 195,633 lb. of green tea were made, 182,522 lb. of which were sold in Calcutta, producing R59,790; and 13,111 lb,, were sold in London, producing £403. The average works out about 5 annas 3 pies for the Calcutta, sold green tea and 7½d for the green tea sold in London. against 6¼d per lb. for the black tea sold by the Company.—*Indian Planting and Gardening*, March 28.

THE BAOBAB TREE IN UGANDA.

It seems a pity that so far no practical use has been found for the baobab tree, beyond the conversion of its fruit shells into calabashes by the natives. The wood of its stem is said to possess qualities suitable for the manufacture of paper, so possibly this, together with the undoubtedly large supply of rags obtainable from the natives, will one day form a nucleus for the material required by a local paper manufactory. The consumption of paper in East Africa must already be very considerable, and is constantly increasing. —*African Standard*, March 10th.

VICTORIA REGIA IN NATAL.—The water plant in the Durban Botanic Gardens is now in four buds, and the first bud is expected to open on Sunday or Monday—the first event of the kind in South Africa. The flowers last only one day. —*Natal Mercury*. March 7.

PRODUCE AND PLANTING.

INSURANCE OF TEA CROPS.

An interesting and important departure is, we understand, being made in connection with the insurance of the new season's Indian tea crop. The risk of damage from the time the tea is plucked until arrival in the United Kingdom has always been readily undertaken by marine underwriters at reasonable rates, but injury to the leaf before plucking, from whatever cause, has had to be borne by the planter. Hail storms are amongst the worst enemies which threaten the growing crops, and extensive damage can be done by a visitation of this nature. Cases are on record where over 20 per cent of a whole crop has been destroyed in a few minutes, and instances of damage amounting to 10 per cent. are legion. So urgent has the matter become that the Tea Association, having been appealed to, took steps with a view to find a workable basis for the insurance of the risk. It circularised the trade asking for statistics to enable a comparison to be made between total outturn and losses due to hail, and the immediate response of a large section sufficiently indicated their appreciation of the importance of the matter. A number of concerns, however, had to refer to Calcutta, as the required figures were not available in London; meantime, the statistics which had been secured covered sufficient ground to enable inquiries to be made in the insurance world, with the result that a favourable rate of premium has been obtained with a workable clause to govern the assessment of losses. We should imagine the industry will largely avail itself of the new facilities, especially as the statistics of losses due to hail prove without any doubt that no district or garden can consider itself safe from a visitation, whatever may have been its experience in the past; the figures show that the longer the immunity the greater the disaster when it arrives. Under such circumstances no prudent planter can afford to ignore such an opportunity to replace, in his calculation, the very real risk of a calamity with a reasonable annual charge in the form of an insurance premium. The rate is of necessity experimental to some extent, but should experience show it to be too high, competition will no doubt afford a ready and effective remedy. In any case the Tea Association, by its efforts which have led to the establishment of insurance facilities, has earned the thanks of the tea-producing industry.

MARKET VALUE OF TEA SHARES.

From the following figures, compiled, as usual, by Mr George Seton, of the Indian Tea Share Exchange, 120, Bishopsgate Street, E.C., it will be seen, says the "Financial Times," that the market value of the shares of the forty five representative companies has again advanced to a moderate extent. With one or two exceptions, the advance has been "all along the line":—

	£.
Face value of 45 companies' shares	9,500,000
Market value July 1, 1897 (top point)	12,000,000
Do Jan. 1, 1902	7,000,000
Do Sept. 1, 1902 (lowest point)	6,050,000
Do Jan. 1, 1903	6,600,000
Do Feb. 1, 1903	6,800,000
Do Mar. 1, 1903	7,000,000

So that the recovery has been just to about the level of the beginning of 1902. As the grand total of the share and debenture capital of the one hundred and seventy tea companies registered, with sterling capital, in the United Kingdom (exclusive of private-owned estates and companies registered, with rupee capital, in India and Ceylon amounts to about £19,000,000, the fluctuations of the entire volume, based on the above figures, may be thus roughly estimated:—

	£.
Face value of (about) 170 companies ..	19,000,000
Highest market value, July 1, 1897 ..	24,000,000
Lowest market value, Sept. 1, 1902 ...	12,100,000
Present market value, Mar. 1, 1903 ..	14,000,000

This shows a rise in value from the lowest point of nearly 16 per cent, but there is still a depreciation from the highest point of nearly 42 per cent, or, taking 100 as representing the top value, the lowest level would be represented by just over 50 and the present level by 58.

Notwithstanding the present rather uncertain outlook as regards dividends for the producing year 1902, Mr Seton considers that, with the restoration, or partial restoration, of public confidence in the stability of the industry, a further moderate hardening of values is to be expected. It may be noted, however, that the better prices now ruling in Mincing Lane, coming, as they have done, late in the selling season, are just barely compensating for the very low prices at which the first half or two-thirds of the crops were sold during the summer and autumn of last year.

The following letter appeared in the *Produce Markets Review* of February 28, and was signed "Home Tea Trade." This correspondent wrote: "It seems to me that

THE TEA POSITION, FROM THE DEALERS' POINT OF VIEW,

is left entirely without an exponent. In the trade and daily papers we have constantly brought before us the importers' and growers' side of the question in the reports emanating from such brokers' firms, and their policy at present seems to be to write so as to foster the idea of an advancing market. To do this they have to introduce statistics which may be very interesting and instructive, but which should have very little real bearing upon the condition of the market in London. Some two or three years since these same firms were asserting that the accumulated over-production of the previous year amounted to fifty million pounds, and, seeing that the present stocks in bond are, if anything, larger than they were at that time, it is at least doubtful if that overplus has been worked off, and when it is remembered that there is sufficient tea in bond—let alone duty-paid stocks in the country—to supply about five months' consumption, it seems very reasonable to suppose that production is still outstripping consumption. At any rate, it will be pretty generally admitted that five months' stock of tea is quite an unnecessary amount to carry, having regard to the heavy supplies reaching us month by month all through the year, and bearing in mind the fact that much of the tea deteriorates rapidly after reaching this country. A five month's stock must mean that much of the tea becomes eight or nine months old before being used, it will lie for several weeks in the distributors' hands after leaving bond. Values have been forced upwards by a sort of cornering process described as regulating the supply,' presumably with the object of enabling dividends to be paid on the capitals of the tea-growing companies, and advantage is being taken of a rather poor season to try and make out that at last consumption has overtaken production, but the asserted smaller production of this season over last seems quite problematical; and, given favourable conditions in the coming season, there will again be an enormously increased outturn, as it appears from the reports of the various companies that no determination has been reached to reduce the area under cultivation, and in some cases mention is made of increased plantations coming into bearing this season. With an expectation of more tea to sell it is probably bad policy on the part of producing interests to push the price of lowest teas upwards, as with common tea about six pence per pound the retailers will soon abolish their shilling canister, which will mean materially reduced consumption, as poor people will buy one ounce for a penny instead of two ounces for three halfpence; also, dear common tea has the effect of bringing down the values of medium tea through the blender being unable to use the higher cost teas so freely in his lower-priced blends. Also, of course, he uses China

teas to the exclusion of Indian and Ceylon, so that it seems as if it would be more to the advantage of the grower to retain the larger consumption by keeping down the price, and to seek for profit in reduced cost of production and the other heavy charges which tea has to pay. That low-priced teas can be made remunerative to the grower appears to be a fact, as some estates, with the lowest average price per lb., are able to pay dividends."

U. S. A. NATIONAL TEA ASSOCIATION.

A NewYork paper says, apropos the tea trade of the United States: "Nearly two hundred members of the tea trade have consented to become charter members of the proposed national tea association, which will probably take shape in the early spring, but unless this federal organisation can reach down to the extreme fringe of the business and control the actions of the retail cutters who have a weakness of cheap tea, with an 'inducement' thrown in, the tea puddle will hardly be disturbed by any ripple the national association can cause. It is 'getting together' that the tea trade needs so much as an active competition between packers of fine blends, assisted by extensive and expensive advertising. It is 'up to' any wholesale of retail grocer with fair capital to be the tea trade's Moses and lead it out of the house of bondage—the bondage to 'tea for price.' with trading stamps, a cup and saucer, 3½ lb. of sugar thrown in. Who'll be the trade's Moses? Not Uncle Sam, with his tea standards and board of inspectors; not the blender of 'something just as good,' not the tea-store chain-system, with its cut prices and very ordinary goods; not the tea peddler who goes from house to house; not 'Lancelot not another,' but just the plain old-fashioned family grocer, who has the wit to see the possibilities in the tea department when it is properly developed and pushed."—*H. and C. Mail*, March 13.

TROPICAL PRODUCTS IN JAVA.

In the districts around Batavia, coffee-planting is on the down-grade owing to low prices, disease among the plants, and exhaustion of the soil. Should prices continue to be low for the next few years, very few estates will be left to profit by any considerable rise in quotations. Tea-growing has met with a check owing to low prices and overproduction. Rubber-growing is extending there, and bids fair to prove profitable.—*Perak Pioneer*, March 24.

THE MANUFACTURE OF GREEN TEA.

(*To the Editor, "Home and Colonial Mail."*)

Sir,—With reference to the manufacture of green tea in India and Ceylon, it appears to me important to consider how this can be made self-supporting at as early a date as possible, so as to relieve those gardens which are making black tea of the necessity of aiding, by bonus, those engaged in exploiting this new manufacture. It will no doubt be necessary for a few years to help those planters who are willing to undertake the manufacture and exploiting of this article, for the capital required to properly alter existing factories and equip the same for the scientific production of green tea must be considerable. There are two methods of distributing this bonus:—

1. Indiscriminately to any factory which makes experimental or small quantities.
2. To bind the planter to produce a season's crop and ensure to him the bounty on a given quantity.

The first we may dismiss at once, for it will only encourage amateur and spasmodic efforts which will waste money, and it will not give sufficient continuity of supply to ensure confidence amongst buyers. The second is the only practical way, for the planter will then study the question of manufacture, and also the markets, &c., and this should enable him in time to build up a sound business in green tea of British growth, independent of bonuses and outside help.—Yours faithfully,

EXPORT.

London, March 12, 1903.

—*H. and C. Mail*, March 13.

PLANTING LABOUR ON THE NILGIRIS.

(*To the Editor, "Madras Mail."*)

SIR.—Sometime back a meeting of the planters in this District was called to talk over the local labour conditions. It was then decided that the rate was in future to be cut down from four annas per day per man cooly to five days for the rupee. One would have thought that this was a blessing to the planter, but it has by no means been so, and the only people we have to thank for the present state of things are ourselves. Before we cut down the rates for labour the coolies used to come to the estates from their villages between 8·30 and 9·30 a.m. and do a fair day's work. But of late it has been getting later and later, and only last week I saw a gang going down to work at 10·45 a m Now, these coolies could not have started work till 11 o'clock at the earliest, and they leave off at 5 p.m., making six hours per day or 30 hours work per rupee at present rates. Under the old rates when they came at 9 they did eight hours per day or 32 hours per rupee. But the loss of two hours is not the greatest loss. When we have crop coming in it takes us now 5½ days to do the same amount of work that under the old system we got done in four days. Not very long ago I happened to see a case of this cut-throat policy going on. Some coolies arrived at 10·15, but the manager, who is trying to get back to the old time of 9 o'clock, refused to give the coolies work. They straightway went on to the next estate and were given work, although they could not possibly have arrived there before 10·30. The estate that had refused the labour has now got to take them at their own time or they go. If they are refused they only have to go on to one of the surrounding estates and are sure of being taken on.

BERRY.

Kil Kotagiri.—*M. Mail*, March 31,

KANAN DEVAN HILLS.—The most complete, up-to-date and interesting account of this favoured district in North Travancore appears in a recent "Pioneer" and is given on page 743. Everything promises well and good returns are expected; only the mono-rail tramway is not quite the success hoped for.

THE OLIVE IN SOUTH AUSTRALIA.—From a report just published, we learn that the cultivation is much in favour, the climatic conditions, nature of the soil, and the introduction of the best varieties, all tending to the success of a highly remunerative industry—of the production of fruit and oil of the best quality. The number of trees returned for 1902 is 66,852, against 61,740 in the preceding year.—*Gardeners' Chronicle*, March 21.

GEORGE WHITE & CO'S ANNUAL TEA REPORT.

(*Extracted.*)

London, 31, Fenchurch Street, E C, March, 1903.

When just a year ago we ventured in our Annual Report to dwell on the gradually improving prospects, it seemed scarcely possible that the hope then put forward of better times could be so quickly realised. As it is, owing to a variety of causes, some of which could not have been foreseen, the tea trade has within the last few months attained a measure of health and general soundness on which it may well be congratulated. The Clearing House dispute which arose in September for some time demoralised the trade, and no doubt retarded the development of the situation. On the other hand, had it not then occurred, more of the crop would have been quitted on the lower level of value, as during the dispute every day was adding to the strength of the position, owing to the reception of confirmatory cables of the shortage and the eventual result was combined action on the part of sellers. The chief causes of the altered situation are to be found, first in the crop falling far short of expectations, and secondly in the marked expansion in the demand for the British-grown article, especially in America, Canada and Russia, and also in less degree, to the displacing of black by green tea particularly in Ceylon.

CEYLON.

Participates with India in the greatly improved position above referred to. Similar agencies have been at work, viz.:—a stationary output and largely increased shipments to markets other than the United Kingdom, together with a very appreciable displacement of black by green tea. In both cases the recent removal of the import tax in America has had a very stimulating effect on business with that country. Quality.—Has been a good average, if not quite reaching the unusual excellence of the preceding year. Really fine high-grown tea has throughout been comparatively scarce and where the standard was fully maintained good prices resulted; on the other hand when it has just been missed the shrinkage in value even in well known marks has been very apparent, as buyers when dealing in high cost tea are extremely sensitive. It is satisfactory to note that really low common, no doubt largely due to the increased manufacture of green tea in the lower districts, has again been practically eliminated from shipments to London and the supply in the inferior grades has, on the whole, been of a useful description. Possibly it is in a measure owing to this that the difference in value looked for between tea grown on the higher and lower levels has often been disappointing to owners of the former, who have not the advantage of a large outturn per acre.

STATISTICAL POSITION.—Although during 1902 there was a falling off in the deliveries of some 7 million lb, partially accounted for by the reduced imports, the stock of 19¾ millions on 31st December as against 68¼ Indian shows the situation as relatively stronger. Shipments to United Kingdom for the past year totalled 103½ millions, or a decrease of nearly 3½ compared with 1901, while the estimate for the current season is only 96 million lb.

For the twelve months the following on Estate Account passed the hammer in London :—

1902.	1901.	1900.
1,012,100 pkgs.	1,059,800 pkgs.	1,125,100 pkgs.
(Av. 6⅝d per lb.)	(Av. 7d per lb.)	(Av. 7⅜d per lb.)

PROSPECTS.

With the steady progress that is being made in all consuming countries the necessity of keeping supply from outstripping consumption appears to be the one thing needful to ensure a continuance of the brighter outlook now before us, and on looking back at the crops under reference it is a good omen to see, that judging from the average quality, there would appear to have been a praiseworthy disposition not to sacrifice the success achieved when our last Annual was issued, and we would venture to refer to the exhaustive remarks then made on this important subject. Formerly a somewhat curious phase of the industry has apparently been that no sooner had a better position been built up than every possible means were taken to demolish it, for instance, a remunerative price for common tea being the general signal for indiscriminate plucking, the obvious result being an eventual slump in values. "Climatic causes" have once again proved to be a trusty friend in disguise, as, to judge from unofficial estimates of the crop put forward in some quarters last spring, had the season been more favourable for flushing, our congratulations today would be more modified. We do not suggest that growers would have again fallen into the fatal and long felt error of 1900, when prudence was cast to the winds, and aided in that instance by the weather, the competition to produce *quantity* at any cost, resulted in a crop out of all proportion to requirements and upset for a long while the important relations of supply and demand. The danger cannot be said to have altogether passed and we would urge upon those interested in the industry to adopt such a policy that the measure of prosperity now attained may be in no fear of being dissipated. The outlook is undoubtedly one of great promise and the temptation to mar it by a system of coarse plucking is bound to have its attractions. We cannot conclude this subject better than by saying "Remember 1900." In this relation the labour question has become a most important factor when considering the contingency of an unduly large crop, as even given the rare experience of a weather being favourable throughout all the districts to abnormally free growth, it is impossible to take the leaf without a correspondingly increased force of coolies, and this, under existing conditions, is apparently not available. These remarks more especially refer to India, but Ceylon is not exempt from troubles in this direction.

MANUFACTURE.

Instead of any endeavour being made to suit a perhaps momentary feature of the demand, which may have disappeared ere the Tea made to meet it has been shipped, we commend each garden to adopt the system which has been found best suited to its soil and surroundings, and so afford a varied supply, rather than all following a general policy, be it that of coarse, medium, or fine plucking. On the average of seasons this will be found to give the best result. Uniformity in leaf and liquor is to be aimed at, as buyers will always then follow a mark to its advantage.

GREEN TEA.

Production a year ago was in its infancy, but so rapid has been its growth, stimulated by the cess, that Ceylon estimates to displace black tea during the current year to an extent of no less than over 12 million lb. India is also making marked progress in this direction and will add an appreciable quota. These teas are being freely introduced in Canada and the States whilst Home dealers also, in many cases, find them suitable to their requirements. Those "finished" in the new style are particularly liked and owing to their cheapness compared with China kinds are receiving more attention; the producing of this style of Indian and Ceylon Green is, however, practically only in an experimental stage and has great possibilities in the future. Various machines are being tried, one recently brought out in Calcutta being specially well spoken of.

MONTHLY AVERAGES

obtained in London for Garden Invoices, from the different Districts of Ceylon from 1st July to end of February, for Seasons 1902 1903, 1901-1902 and 1900-1901.

TOTAL CEYLON.

Season	July Pkgs.	July Avge.	August Pkgs.	August Avge.	Sept. Pkge.	Sept. Avge
1902-1903	135,800	6⅛	88,800	6½	120,000	6½
1901-1902	124,500	6½	94,800	6¾	86,500	7⅜
1900-1901	138,200	7⅛	116,000	7	98,200	6⅞

Season	October Pkgs.	October Avge.	Nov. Pkgs.	Nov. Avge.	Dec. Pkgs.	Dec. Avge.
1902-1903	82,600	7¼	63,600	7⅛	52,000	7¾
1901-1902	90,700	8	65,900	7¾	69,600	7½
1900-1901	103,900	7½	78,000	7⅝	73,500	7⅜

Season	January Pkgs.	January Avge.	February Pkgs.	February Avge.	Total London Avgs. for 8 months. Pkgs.	Avge.
1902-1903	90,700	7⅝	80,300	7⅝	713,800	7
1901-1902	115,300	7⅜	101,600	7	748,900	7¼
1900-1901	146,000	6⅝	107,700	6¼	861,500	7

MONTHLY AVERAGES OBTAINED IN LONDON FOR TEAS FROM DIFFERENT DISTRICTS IN CEYLON DURING 1902, 1901 AND 1900.

Districts.	Year	Jan. d.	Feb. d.	March. d.	April. d.	May. d.	June. d.	July. d.	August. d.	Sept. d.	Oct. d.	Nov. d.	Dec. d.	Total Packages.	Averages for 12 Months.
No. 1.—Uda Pussellawa, Nuwera Eliya, New Galway, Dimbula and Lindoola ...	1902	8¼	8¼	8⅜	8¼	8¼	8⅛	7⅞	7¾	8¼	9	9⅜	9¼	235,891	8⅜
	1901	8⅜	8¼	9	8¾	8	7¾	7⅝	8	8¾	9¾	8⅞	9¼	257,481	8½
	1900	8¾	9	9¼	9	8⅜	8⅛	8¾	8½	8⅝	10	10¼	9⅜	243,936	9
No. 2.—Maskeliya, Dickoya and Bogawantalawa	1902	7¼	7⅛	7¼	7	6⅜	6⅞	6⅜	6¾	6⅞	7½	8¼	8⅝	148,861	7⅛
	1901	7⅛	7⅜	7⅜	7⅜	7⅛	6⅞	6¾	7	7⅝	8⅛	8	7½	164,361	7⅜
	1900	8	8⅛	8⅛	8	7⅛	7	7⅛	7⅛	7⅛	8¼	8½	8¼	183,211	7¾
No. 3.—Lower Dickoya, Ambegamuwa, Kotmalie, Yakdessa and Dolosbagie ..	1902	7	6⅛	6⅝	6½	6	5⅜	5⅝	5⅞	5¾	6¼	6⅞	7⅛	91,486	6¼
	1901	6⅛	5¼	5⅝	6⅛	5⅞	5⅜	5⅝	6¼	6¼	7½	7¼	7	98,618	6⅛
	1900	7	6⅞	6⅝	6⅝	6⅝	6	6⅛	6⅜	6⅛	6¼	6¼	6⅛	115,127	6⅛
No. 4.—Pussilawa, Ramboddo, Pundaloya and Kadoganawa ..	1902	7⅛	6⅝	6⅜	6⅝	6⅜	6	5⅝	6	6⅞	6½	7⅛	7¼	100,647	6⅝
	1901	6⅛	6	6⅝	7	6⅛	6¼	6	7	6⅞	7½	7⅜	7⅛	97,144	6⅞
	1900	7⅛	7⅛	7¼	7	6⅞	6⅜	6⅞	6⅝	6⅝	7	7	6⅝	98,102	7
No. 5.—Hantane, Nilambe, Hewaheta (U. & L.) Maturata, Dumbara, Rangala, Nitre Cave and Medamahanewera ..	1902	7	6½	6½	6¼	6⅛	5⅞	5⅝	6⅜	6¼	6½	7⅛	7½	70,479	6⅜
	1901	6	5⅝	6⅜	6½	6	5¾	6	6⅜	6⅝	7¾	7⅜	7½	78,824	6⅝
	1900	7½	7⅛	6¾	6⅞	6⅝	6¼	6½	6⅛	6⅝	7	6⅞	7	90,115	6¾
No. 6.—Kallebokka, Knuckles, Hunasgeria and Panwila ...	1902	6⅞	6½	6½	6⅛	6	5¾	5⅜	5⅞	5¾	6	6⅝	6¾	36,458	6⅛
	1901	5⅝	4¾	5⅞	6¼	5⅞	5¾	6	6⅛	6⅛	7¼	7⅛	7	41,412	6
	1900	7	6⅞	6⅛	6½	6½	6	6¾	6⅛	5⅞	6	5¾	5½	46,315	6⅜
No. 7.—Matale, East and West ...	1902	6¾	6¼	6⅜	6¼	5⅜	5⅝	5¼	5⅝	5⅝	5⅞	6½	6⅝	55,534	6
	1901	5⅜	4⅝	5½	6½	5¾	6⅛	6¾	6	6½	7	7⅛	7	51,507	5⅞
	1900	6⅞	6⅝	6⅝	6¼	6¼	5¾	6⅛	6	5⅞	6⅛	6	6	55,231	6¼
No. 8.—Kurunegala, Polgahawela, Kegalle and Henaratagoda ..	1902	6½	6	6⅛	5¾	5⅝	5¼	4⅞	5⅛	4¾	5	5⅞	6¼	3,456	5½
	1901	5¼	4¾	5⅝	5¼	4½	5	5	5½	6⅛	6½	6⅞	6⅞	3,508	5½
	1900	6⅝	6⅝	6	6	6⅜	5¾	5⅝	6¼	5½	5¼	6	6¾	2,751	6⅛
No. 9.—Kelani Valley, Avisawella, Yatiyantota, Kittoogalle and Lower Dolosbagie ..	1902	6⅞	6¼	6¼	6	5⅝	5½	5⅛	5½	5⅝	5½	6⅜	6⅝	81,848	6
	1901	5¼	4⅝	5	5½	5½	5¼	5½	6	6¼	7	7	6⅞	88,535	5⅝
	1900	6⅞	6⅝	6½	6¼	6	5⅝	6	5⅞	5¾	5¾	5⅝	5½	106,197	6
No. 10.—Kurunwita, Ratnapoora, Rakwana, Balangoda and Kukulu Korale ...	1902	7⅛	6⅜	6⅜	6	6	6⅝	5⅛	5⅛	5⅝	6	6¾	7¼	23,942	6¼
	1901	6	5⅝	6⅛	6	5½	5⅝	5¾	6½	6⅜	7¾	7¼	7½	25,960	6¼
	1900	7⅛	6⅜	6⅞	7	6⅛	5⅞	6⅛	6⅛	6¼	6½	6½	7	21,010	6½
No. 11.—Kalutara and Bintota ...	1902	6⅜	6½	6½	5⅝	5⅝	5⅝	5⅜	5½	5⅝	5⅝	6⅛	6½	30,798	5⅞
	1901	5½	6	6½	5⅞	5⅛	5⅝	5⅝	5¾	6½	6⅞	7	6¾	31,906	5⅞
	1900	6⅜	6⅝	6½	6¼	6	5⅝	5⅞	6	5⅞	6	5¾	6	34,052	6⅛
No. 12.—Udagama, Morowak Korle ...	1902	6¾	6	6¼	5¾	5⅝	5⅝	5⅛	5½	5⅝	5⅝	6½	7½	7,580	5¾
	1901	6	5¼	5¾	6½	5½	5½	5¾	6	6⅝	6¾	6⅝	7	8,826	6
	1900	7	7	6½	6⅝	6⅜	6	6⅝	6¼	6¼	6⅝	6¼	6¾	8,480	6½
No. 13.—Haputale, Badulla, Madulsima and Passara ...	1902	7⅜	6¾	7	6⅝	6½	6½	6⅛	6⅝	6¾	8¼	8¼	8	127,129	7
	1901	7¼	6½	6⅞	7⅛	6½	6½	6⅛	7	8	8¾	8	7⅜	117,770	7⅛
	1900	7¾	7⅜	7⅝	7⅜	6⅞	6½	7	7⅛	7⅝	8½	8⅝	8¼	121,576	7½
GENERAL AVERAGE OF ALL DISTRICTS ...	1902	7⅜	7	7⅛	6¾	6⅝	6½	6⅛	6½	6½	7⅛	7¾	7¾	1,012,109	6⅞
	1901	6⅝	6¼	6¾	7⅛	6½	6⅜	6½	6¾	7⅜	8	7¼	7½	1,059,852	7
	1900	7⅝	7⅝	7½	7½	7⅛	6⅝	7⅛	7	6⅞	7½	7⅜	7⅜	1,125,103	7⅜

GEO. WHITE & Co., Tea Brokers.

INDIAN TEA.

(CARRITT MORAN & CO.'S INDIAN TEA MARKET REVIEW, SEASON 1902-1903.)

Calcutta, April 1903.—Season 1902-1903 has closed with an actual crop through Calcutta and Chittagong of 175 millions, of which shipments to the United Kingdom have totalled 145½ millions, the corresponding figures for last year were 174¼ and 153 millions, respectively. The quantity sold on the Calcutta market totalled 47½ millions or 27¼% of the crop.

QUALITY.

In respect of quality the crop has been barely up to average standard, and taken all round has not been equal to that of last year. Assams have, in some measure, been disappointing, at no period during the season have they stood above ordinary average quality, and like last year the supply of good, autumn teas has been small. Cachars & Sylhets have, as a rule, been good, Terais fair, and Darjeelings, with the usual exceptions, have been attractive. Dooars teas in the early months were plain and somewhat indifferent, but towards the close of the rains they rapidly improved, and this district was fortunate in producing a particularly good autumn crop which commenced early and was consistently desirable until the close.

From Southern India supplies have again found their way to this market in small quantities; the offerings throughout the season have totalled two thousand packages, which have realised an average of about 5¼ annas. The teas have been well-received, considering that they are strangers to this market, and also that growers have not yet had time or opportunity to study the particular requirements of the trade here, and produce such types as would secure for them a price that would be really indicative of the full benefit to be derived on this market, where freight and charges are so much lower than they have been accustomed to pay.

MANUFACTURE.

The system of manufacture, in Travancore more especially, seems to be chiefly directed towards cup character, in which a colory liquor is apparently the desideratum, and aimed for consequently at much expense of style and appearance. London having hitherto been the exclusive market, this tendency is explained and the teas are doubtless right for that centre. In Calcutta, however, much importance is attached to make and shape, and generally stylish appearance in teas of the same level of value, and Travancore teas could undoubtedly be made a great deal more attractive than they are with some slight deviation from the present recognised system of withering and rolling and particularly in respect of sorting also, which requires more careful and thorough manipulation. With these improvements there is no doubt that the Eastern market, with its variety of interests, would give a fair return to producers, provided the supply became regular and consistent.

The industry has again been perhaps more fortunate than circumspect in producing a moderate crop; like last year the weather has played an all-important part in levelling down supplies, and although it cannot be said that there has been any positive tendency to increase the supply at the expense of a quality, the impression nevertheless is that the real check is explained by

ADVERSE CLIMATIC CONDITIONS.

The effects of weather as affecting supply have been phenomenal; the cold season set in early, and at the same time so earnestly that a few days sufficed to upset all calculations, and a continued shortage became evident as the season grew older. The local market responded immediately to the altered conditions and prices advanced appreciably and steadily from sale to sale. London, however, was slow to recognise the changed aspect; it eventually broke away from its dead level of value, but only for a time, and in spite of a heavy shortage in supply, not only from here but also from other countries of production, it again set back. The sullen and sensitive tone which existed in the home market for many weeks, difficulty in moving up values, and a non-responsive trade generally must at the time have been a great disappointment to sellers and productive of serious reflection on their part.

THE RELATIONS BETWEEN BUYERS AND SELLERS in London in the latter months have never been so pregnant with suppressed antagonism as indications seemed to portray, and in this was probably seen the inconsistency of the position of the home trade. Sellers, however, have since had the balance all in their favour, they have seen their opportunity to force the market and have taken advantage of a position which though new to them, was assured and justifiable. They have had to carry the stocks but it has paid them to do so, and it has been no burden to them. Buyers have retaliated by holding aloof and relying upon hand to mouth dealings to see them through, but it could not last long enough and they were unable to keep pace with consumption.

At the close of the twelve months therefore the producer finds his position strengthened very considerably, but it should be recognised as the outcome of a short yield and a still further deficient supply, so far as London is concerned, owing to the increased offtake in Calcutta by new markets. These are the factors that have formed the backbone of the sellers' position, enabling them to carefully nurse the home market in a way that has not hitherto been experienced in the trade, and with results so satisfactory to themselves.

To producers, the season, though full of encouragement at the close, has again shown disappointing results. The position on their side is undoubtedly stronger and a brighter future is before them, and it is not difficult at present for them to appreciate both, seeing that the recent recovery in prices has imparted financial encouragement to some slight degree. They have, however, been handicapped by climatic influences which have cut down yield and the advance in value has been long delayed.

THE PRODUCERS' POSITION.

That they have done much to improve their position cannot be denied, the improvement though acquired is not yet fully apparent but will certainly take substantial form in the near future. In the meantime the history of Indian Tea for the past two seasons affords much for contemplation on the part of the grower. On a two years' comparison he will recognise that the supply of the United Kingdom has been about right, that market having stood two consecutive short crops without disturbing the *average* value to any great extent; at the moment demand and supply at home

are running almost abreast and on the same reckoning he will realise how sensitive and easily affected by supply and the handling of it, the value of tea in London is likely to be during the ensuing season. It leaves a very small margin to allow for increased production without disturbing value, and if exports to the United Kingdom show at any time only a moderate increase even, it will probably be immediately reflected in prices.

Although the crop this year has been short of estimates and expectations the supply has been sufficient. The total outturn was actually in excess of last year; had this excess gone to London the position there would have been one of extreme anxiety; outside markets, however, saved the situation, for they not only absorbed the increase through Calcutta but a great deal more, and their worth has never been brought home to the producer so strikingly as during the past season. The quantity diverted from the London Market through these channels has played a much more important part in determining the value of tea than inclement weather or any other factor affecting supply, and although these demands are at last being recognised, they do not receive the full consideration they justly deserve, as the only real and sound means of securing the industry in every way from the evils attending a full or abundant yield and of permanently raising value. The history of the past season's trade with countries other than the United Kingdom is extremely satisfactory; it is indicative of continued perseverance and energy by those engaged in the trade who are to be congratulated on the success achieved.

LOCAL MARKET AND DIRECT SUPPLY ABROAD.

The supply placed on the local market for disposal in 1901-1902, shewed a very marked decrease on previous figures, and consistently, Indian Tea lost much ground in the markets of the world outside London. Last year, however, Calcutta received a somewhat larger proportion of the crop, the increase was small, but it gave these markets the opportunity to recover lost ground and new ones to come in also; they responded at once to a more liberal supply and not only have they now regained their absorbing powers of 1900-1901, but they have gone further, and during the past year their accumulated strength has been the brightest feature of the season's restrospect.

As before remarked, the persistent expansion of these valuable outlets should be recognised as the safety valve and governor of the industry. They have unquestionably prevented a state of stagnation in the home market, and the movement towards a higher level of value this year can *only be attributed to their dealings*, for without their increased offtake, the crop, though short, would have been quite enough to make it impossible to raise prices.

The progress made in the twelve months necessitates an extension of last year's figures and comparison with those of Ceylon, which will once more substantiate the assertion, that the more reasonably liberal the supply to this market, the more will our fresh outlets expand and afford relief to London.

INDIA.

	Total Crop. millions	Offered in Local Market. millions	Shipped to outside Markets. millions
1902 ..	175	47½	29½
1901 ..	174¼	46¼	20¾
1900 ..	187½	50	25
1899 ..	174¾	50	22
1898 ..	153	49	17¾
1897 ..	148¼	46	13
1896 ..	135¼	47¾	13

CEYLON.

	Total Crop. millions.	Offered in Local Market. millions.	Shipped to outside Markets. millions.
1902 ...	149 ...	51 ...	45½
1901 ..	146¾ ...	51 ..	40
1900 ..	148½ ..	48 ..	34½
1899 ..	130 ..	38½ ..	25½
1898 ..	119¾ ..	36 ...	23¾
1897 ..	116 ..	33¾ ..	17
1896 ..	108 ..	32 ...	14¼

A careful comparison of the above figures for seven years will show how consistently the offtake of Indians by outside markets has followed and been governed by the irregular offerings in Calcutta, and in the case of Colombo how carefully their corresponding demands have been fed and fostered in the local market from year to year; this will go some way to explain her present figures which are so much better than ours, but her geographical position has much to do with her success.

DISTRIBUTION OF THE CROP.

The following figures show the distribution of the crop from Calcutta and Chittagong compared with recent years:—

	1902-1903. mills.	1901-1902. mills.	1900-1901. mills.	1899-1900. mills.
To United Kingdom	145½	153	161	149¼
,, Colonies ..	5¾	8½	10½	8¼
,, America ..	9¼	2¼	4½	6
,, Other outside markets	14½	10	10	7¾

These show excellent progress, except in the Colonies, where there has been much depression in trade generally. In respect of tea, business there has been sadly disorganised by drought and the uncertainty in regard to the settlement of duty, and imports of all tea last year fell off to a very serious extent; latest advices, however, are satisfactory. They report a recovering trade and an improving market, and a very much better state of affairs with a larger offtake may be confidently anticipated during the ensuing season. The figures for America are particularly good, but the most noteworthy increase has taken place in our trade with Russia. This demand is not a new one for Indian tea, but it is new to *this* market and the transfer from London of a very large portion of these interests is the most welcome and satisfactory feature of our dealings with foreign markets. The quantity she has taken has been very considerable and she has been a more reliable and consistent customer than the Colonies.

In detailing outside market figures it must be noted that a fair quantity of tea is actually destined for these ports in Chittagong shipments; though definite information cannot be ascertained at this end, enquiries on the home side make

it probable that between $1\frac{1}{2}$ and 2 millions have to be thus accounted for which will further improve the foregoing figures. At the same time it is probable that a certain quantity eventually finds its way to London where it has possibly been intercepted on its way elsewhere.

The following figures show the ratio between exports to foreign markets from Calcutta and sales on the local market. The total is $62\frac{1}{4}$ per cent of the offerings compared with $44\frac{3}{4}$ last year.

	1902-1903.	1901-1902.	1900-1901.	1899-1900
	mills.	mills.	mills.	mills.
of Calcutta sales ..	$47\frac{1}{2}$	$46\frac{1}{4}$	$49\frac{3}{4}$	50
	per cent.	per cent.	per cent.	per cent.
Shipments to Colonies ..	12	$18\frac{1}{2}$	$21\frac{1}{4}$	$16\frac{1}{2}$
Shipments to America ..	$19\frac{1}{2}$	$4\frac{3}{4}$	9	12
Shipments to other markets	$30\frac{3}{4}$	$21\frac{1}{2}$	20	$15\frac{1}{2}$

GREEN TEAS.

The past year has seen a definite start made in the manufacture of green teas and in respect of value these types have, as a rule, compared favourably with ordinary blacks from the same garden. A fair quantity has been made, totalling about $1\frac{1}{2}$ million pounds, and in the Calcutta market $\frac{3}{4}$ million pounds have changed hands at an average of $5\frac{1}{2}$ annas per pound. Consistent and regular supplies have been received from the following gardens:—Manabarrie, Moheema, North Western Cachar, Longview and Kolbong, and occasional invoices have come forward from Holta and East India (Cachar); in addition to these sundry lots of a tentative nature have been seen but they have been of no service for gauging comparative values of greens against blacks, the breaks having been small, in many cases single chests or half-chests only. As a test of style and character they have however been useful, but in regard to price, to obtain a true comparison of probable results of manufacture of each type, it is necessary to conduct the trial on market lines and put fair-sized breaks before the trade.

The class of green tea chiefly produced has been the unfinished type, which has met a ready demand for certain outlets. But in this state other markets that required finished types have not had opportunity to interest themselves, a few small lots only having appeared spontaneously, but these have also been good and have been well spoken of in the terminal market. The process of converting the unfinished into pure finished types has now been introduced and has proved successful; it is simple and effective and the finishing is done at small extra cost. During the ensuing season arrangements will probably be made for finishing teas in Calcutta, which can be availed of either by sellers or buyers.

The duty question has once more formed the subject of an appeal to the Home Government, and the Tea Association have asked the powers on this side to use their influence in support. Twelve months ago the industry was disturbed to some extent in expectation of the possibility of an increased impost, which happily did not occur; this year anticipated legislation has also had some effect on the markets, but in a different direction, dealings for some time past having been controlled by the prospect of a reduction in duty which is generally considered reasonable and fair. The Indian Tea Association are to be congratulated on the success they have achieved in the direction of instituting a compulsory tax on all exports, similar to that which has been in existence in Ceylon since 1893.

There are many ways in which the object of the bill can be attained, all of which, it may be assured, will receive the careful attention of the special Committee to be appointed to deal with the funds; one of the most important, however, is in connection with the manufacture of green tea, and the opportunity afforded to induce freer supplies. Ceylon granted bonuses to producers of green tea last year to the extent of about R2,50.000; the supply increased almost $2\frac{1}{2}$ millions during that period.

That more attention will be given to green tea in India seems probable, but at the same time there is some hesitation in taking up and providing for its manufacture. This is to be understood, as in the present state of the industry producers do not see their way to increase their outlay by the cost of additional and necessary machinery, and to embark on a new enterprise without having some inducement which, as in the case of Ceylon, might take the form of a bonus. It would, of course, be unwise for any garden to allow a return of this nature to have any bearing in estimating possible results of the manufacture of greens, it should be ignored altogether, and a self-supporting basis only considered; what is required is *inducement at the start*, and provision against the possibility of unfavourable results during the experimental stages. A bonus would supply this want. The manufacture of greens in India would not have been started last year had it not been the Association's bonus that originally induced it; the American and Canadian markets can take greens freely, and if India does not make them she cannot hope to push her trade with these centres to any appreciable extent. Ceylon in the meantime is making rapid strides in this direction, and she will capture these outlets to her exclusive advantage unless India, if she wants a share of the trade, is placed on the same footing. In anticipating the ensuing season events during the past year furnish useful indications. Recent incidents are full of significance in respect of the course of the home market which promises to be an extremely sensitive one. The movements of exports from this end, which will be carefully kept in view, and the handling of supplies in London, which will be cautiously followed, will be the chief factors in determining the value of Tea. At the moment the producer's position is strong and his prospects good, better than they have been for some years; home consumption is free, stocks light, (they will probably be abnormally low in July next) and buyers carry no burden in the shape of dear tea and difficulty in moving it. To maintain their position and further improve it, the producers' policy is clearly suggested in keeping the crop within reasonable limits, and in being fully alive to the certainty of a return to starvation prices as a result of the taking of any liberties in the direction of supply. The recent bed rock level of value has in some measure influenced better and less tea, but there is no disguising the fact that weather has been the prime mover. At this juncture it would be extremely unwise if the recent advance in value should be met by converse working, and reflected in a freer system of plucking, the drawbacks of which may be further aggravated by weather favourable to yield. The interests of growers and sellers being identical, the latter will realise from the past year's experience the advantages derived by feeding the market

judiciously, and above all the real cause of the turn of events in their favour which a free and expanding trade in Calcutta with outside markets has brought about; it will encourage them to give these markets every consideration. Much assistance is also at hand in dealing with the ensuing year's outturn; not only has Calcutta a rapidly growing constituency in all parts of the world which is ready to relieve London to an ever-increasing extent, if properly supported, but the manufacture of green tea will sensibly reduce the supply of black; the influence of the Cess also, if it become law, will soon be manifest.

In contemplating the approaching year's crop there is nothing to convey an impression that it will be a heavy one, beyond the assumption that two moderate yielding seasons are likely to be followed by one of abundance, or that growers will be persuaded by the advance in value to aim for quantity. The first named possibility is a distant one, and favourable weather will meet counteracting influences. Lean years and hard times through which the industry has been passing have enforced a continued and rigorous cutting down of expenditure, which has had, and will have, its effect on cultivation and, in turn, on yield to a greater extent than is generally supposed. Short labour forces in past years will affect outturn in a similar manner, and it must be remembered that considerable areas have been abandoned. At the same time extensions coming into bearing are small and the plucking area is probably much about the same as last year. The second named possibility cannot be so definitely answered, but circumstances are in favour of moderation. It is quite recognised by producers that the turning of the corner, over a period of two years, has been brought about by care, as well as by weather and greatly assisted by the expansion of foreign markets, and it is also accepted that the situation can be easily disturbed from its present tendency which is so much in their favour. The position is appreciated, and a reasonable conclusion is that it will be respected. The ensuing season can, therefore, be anticipated with much confidence. Prospects are exceptionally favourable from every point of view, and, with careful working in the districts and judicious handling in the markets, there is every reason to look forward to a prosperous year.

WILL THERE BE TOO MUCH RUBBER?

In view of the amount of rubber planting now in progress the question has been asked—and it is a very natural question—whether there is not danger of a new source of supplies being created, out of all proportion to the world's needs. In other words, whether the result may not be overproduction of rubber to a degree that will render the new planting interest unprofitable.

If the consumption of rubber were a fixed quantity, with a definite limit already reached, caution might be wise in the matter of providing new sources of supply. But this is not the case. The consumption of rubber in the United States alone has doubled within seventeen years, and from whatever standpoint the rubber industry may be viewed, it gives promise of a more rapid rate of expansion to come with the many new uses of rubber, the growth in population and the greater buying capacity of the people. The consumption has also become much greater in other lands, and there yet remains a large part of the world's population to become users of rubber goods. Within twenty years the production of 'Para' rubber has increased threefold, and meanwhile the present enormous supply from Africa has been developed. Yet such has been the increase in demand that prices have tended constantly upward, and market supplies are smaller today than for years past.

The natural supply of rubber on the other hand, is limited. There is no longer any unexplored country in which rubber trees may be hoped to exist. There are forests known to contain rubber which have not yet been 'worked,' but these virgin fields are lessened in extent every year. The gradual opening of new fields is offset in part by the exhaustion of old ones. It is true that, under the more intelligent supervision now given to them, the existing rubber trees in Brazil and Bolivia, for example, may long be conserved. Still there must come a time when all existing natural supplies will be taxed to their utmost, and then, without new resources, the further growth of the rubber industry will be impossible. No date for this situation can be fixed, of course, but its imminence certainly appears to us to justify the planting of rubber.

Several millions of rubber trees have been planted, thus far, but so recently that only a few thousand have reached a productive age. It is not reasonable to suppose that all the others will reach maturity, for the reason that rubber planting is a new interest, and as such liable to its share of failures. The addition to the world's supply of rubber from the existing plantations will be made gradually, as each year's planting begins to yield, and is likely to be required by the growing consuming demand. The same consideration will apply to such planting as may be done for a good many years to come. It must be remembered that rubber can be cultivated successfully only within very restricted limits. The territory in which rubber might thrive is much wider, but the natural conditions preclude undertakings there by outsiders, and render the collection of wild rubber so difficult as to make the cost of the product sometimes $2000 or more per ton.

It must be expected that, ultimately, the success of rubber planting will result in lower prices, but not necessarily to the disadvantage of the planters. We have quoted Mexican rubber lately at 68 cents a pound, which means $1,500, gold, per metrical ton. If rubber planting is going to succeed at all, it is not going to cost $1,500 or half of it, to prepare and market a ton of products, and at much lower market rates there ought to be a good profit. At the same time every material decrease in the cost of rubber is bound to give a new impetus to consumption This page would not hold a list of the practical uses for rubber which are held in check today by the high cost of the raw material. But when people once become accustomed to a new use of rubber, in which they are encouraged at first by low cost, they do not give it up latter if obliged to pay more for the article. A reasonable expectation, therefore is that if rubber prices should, in time, be depressed materially from the present level, the effect will be such an increase in consumption as to check the fall and soon create an upward tendency. This sort of fluctuation may be the continual experience of future generations of rubber planters, but it is a consideration too remote for those who are engaging in the business today.

Finally if the rubber planters are alive to their opportunity they will produce an article superior to many rubber grades now marketed, and obtain better prices. Then, if the market should become overstocked the last sorts to feel the depression will be the carefully prepared plantation products, which will be preferred by manufacturers at good prices to badly cured dirt-filled and foul-smelling rubber collected by natives in their primitive way, and now used in the factory through necessity. It might be suggested that people have been cultivating rice and wheat and other crops, and making iron and cloth and leather, for some thousands of years, and that in none of these lines has overproduction ever resulted to such an extent as to render the work unprofitable, taken as a whole, or unprofitable anywhere for a long continued period.—*India Rubber World*, March 1.

DEVELOPMENT OF COTTON-GROWING IN BRITISH POSSESSIONS.

The Committee of the British cotton-growing Association held a meeting yesterday at the offices of the Manchester Chamber of Commerce, Mosley-street. Letters were read from the experts already sent out. Mr. Severs (the Gambia), Mr. Prince (South Nigeria), and Mr. Neely (Sierra Leone) all expressed the opinion that the various places they had visited were suitable for cotton-growing, and that the prospects were encouraging. Nr. Neely sent a sample of cotton just picked, grown from American seed, which was pronounced very good and the kind of cotton required. Letters from Mr, E Nathan and Count Gleichen were read relating to cotton-growing in the Soudan, Mr. Nathan is sanguine as to the prospect. The consideration of the matter was deferred till Mr. Nathan's return. The secretary reported that four bales of cotton sent by the Zambesi Industrial Mission had been sold at 5½d per pound. Had it not been mixed the value of the cotton would have been much higher. A letter was read from Mr. T Morris, of Barbados, and it was decided to send out at once three gins and three presses to the West Indies. A large number of persons are now growing cotton there, and the prospects are good.—*Manchester Guardian*, March 10.

PINEAPPLE CULTIVATION IN MADURA

The cultivation of these and other pines is quite easy, and I think well repays the trouble taken. In August I re-port all my pines, I make up a compost of 2 baskets red earth, 1 basket sand, 1 basket each well rotted cattle and horse manure. The pots are well drained, as I find the plants like a lot of water and like it to run away quickly. When re-potting I take away all shoots, but the one which I am going to grow for fruit. (it fruits the second year). As soon as the young shoots are well established plants, I cut away the portion that has carried fruit this year. In January of each year, I give each pine that has fruit, a good supply of liquid manure once every week, I find this is a great help to them and the fruit is much larger and heavier. I do not think the country pines are worth growing when you can get the Kew or Ceylon pine, but I have grown them up to 6 lb (including the head) and the Ceylon pine I have grown to 11½ lb (including the head). I am told they should grow to 18 lb.—W. H. OAKES, Esq.

COTTON CULTIVATION IN CENTRAL ASIA.

In view of the increasingly important part which the production of cotton in Central Asia seems to play in connection with the textile industry of European Russia, the following remarks translated from the "Journal" of the Ministry of Finance by the "Journal de St. Petersbourg," concerning the cotton crop and the state of the plantations in 1902 may be of interest. Last year was not favourable to the cultivation of cotton in Central Asia and Turkestan; the yield was 13·1 per cent below that of 1901, which was itself not abundant. The diminution in the yield of cotton from American seed was as much as 32·2 per cent, while on the other hand indigenous cotton showed an increase of 32·5 per cent. It was not so much a question of diminished production as of a restricted area. Another factor has indirectly contributed to the temporary decline in the cultivation of cotton in Central Asia. Owing to the system of protection in vogue, the cultivation of cotton had become so profitable in Turkestan that the natives had abandoned all other branches of agriculture. Moreover in the absence of agricultural banks, they have recourse to a system of advances which weighs very heavily upon them. Under this system the buyer readily makes advances to every grower who guarantees to supply him with a certain quantity of cotton. Being better informed than the producer, the merchant generally knows how to keep for himself the best chances of profit, and if the price of cotton is high at the time when the product is delivered, the grower finds himself deprived, of a part of the profit which he expected to obtain. Another cause for the present decline in the cultivation of cotton is the lack of manure. In the absence of irrigation works, the natives find themselves obliged to cultivate cotton year after year on the same land; hence the need for manure and the abnormal loss of the seed. In Khiva and Bokhara the cultivation of cotton has replaced that of wheat. The average yield of the cotton plantation in Central Asia was greater in 1902 than in the previous year except in the district of Taschkent. Compared with 1901, the total yield of cotton in 1902 showed a decrease of about 1,683 400 pouds, the estimated figures for last year being 4,900,000 pouds, of which 2,700,000 were American cotton.—*Board of Trade of Journal*, Feb 26.

SELANGOR RUBBER.

From Bukit Rajah Estate, Klang, a small quantity of gutta rambong from trees 4½ years old was sold in Singapore at $190 per picul [or £19 18s per 136 lb—*i.e.* or 2s 9d per lb.] the cost of collection being $72 per picul [above 14s 6d per 136 lb.] This rubber was scrap. Subsequent tappings, while no more expensive to collect, show great improvement in quality, and should fetch considerably higher prices.—*Straits Times*, March 25.

TEA PRUNING: THE LATEST DELIVERANCE BY THE INDIAN EXPERT AUTHORITIES.

The appearance at this time of the *brochure* by Sir George Watt, and Mr Harold H. Mann on the "Principles of Tea Pruning"—1903 No. 1 of *The Agricultural Ledger*, published in Calcutta—is opportune. The postponement of the date for receiving the Ceylon Prize Essays on Pruning, will give intending contributors who read this paper the benefit of the latest deliverance of the recognised Indian authorities; and although it is unlikely that they will find in its pages much that is new, yet the re-statement of the old and established principles of scientific tea pruning should be a useful check. The Ceylon students of the "Principles of Tea Pruning" are ever made conscious of the fact that the field of observation from which the conclusions are drawn is the Indian Presidency, and that it is necessary to keep this in mind when applying them to our local industry. It detracts somewhat from the value of the paper that the range of its field is limited; still the general conclusions, which apply here as well as elsewhere, are of high value, are worthy of remembrance, and in practical hands will be found making for utility. In tea pruning, it makes all the difference in the world if the planter has an intelligent knowledge of what the application of the knife aims at, as compared with the uninstructed man who knows the system but not the reason for it.

"Pruning," say the learned authors, "is the most important operation in the tea garden . . . demanding the most skilled, careful, and constant supervision." This note is sounded all through the paper and reaches its climax in these words, "the sooner it is recognised that pruning should be bush by bush, and not plot by plot, the better will it be for the industry at large." As an ideal, the principle here laid down is indisputable, but as a working hypothesis it is simply hopeless. On a moderate-sized estate—300 acres or so—the number of trees run over the million, and when this is stated, the utter impracticability of an individual treatment of each bush is glaringly manifested. This objection to the "bush by bush" system of pruning has had the attention of the gifted authors, having been urged before by Indian tea planters. The authors admit the difficulty, and offer as one way of overcoming it in the following method. "Trained sirdars go through their respective portions of the garden, and fasten a stake bearing a coloured string alongside of each bush that would require to be pruned in a particular way." The Manager examines these sufficiently to satisfy himself that his ideas are understood; then coolies follow, each pruning his own colour. A very ingenious plan, indeed, but—we incline to think—hardly a feasible one. It would be interesting to know what the cost of the "coloured string" system amounts to, and if the financial results as compared with the style which usually obtains—a few broad principles which the cooly's mind can grasp, with moderate supervision—are in striking contrast. We are not quite sure if the expert authors are not making somewhat of a fetish of their system of pruning. Less elaborate and burdensome styles have been adopted with some success, and the test should be, *results*. Good results are, however, not always admissible evidence in the eyes of the Indian authorities if their principles are departed from, but are said to be "*in spite* of a bad system of pruning." When the good results follow the Watt and Mann methods, to dispute the connection is not allowable! It is possible, we think, to make tea pruning too scientific, and this seems to us a real danger when the guide has no practical experience. Correct pruning is, according to our authorities, a cut which "leaves practically no wood above the bud from which the new shoot is to arise." Again "If the knife be inserted below the base of the bud, and a long slanting section be made, the bud will be starved and thus produce a sickly shoot. If the section be made at a point, say from half-an-inch to two inches above the bud, the protruding portion will be starved and die accordingly." It takes a good deal from the practical value of the above information when we elsewhere read, "It is often impossible to know where the bud will appear in a tea bush"!

The scientific man, who is not also a practical man, is too apt to ignore the necessary commonplaces which lead to success. Expert scientific advice is invaluable, and if it can be linked on to work-a-day methods, there is room for rejoicing; but the effects on the planter must be depressing when he is urged to follow lines which are quite unworkable with the material at his command. Ramasamy hunting for the "often-impossible"-to-find tea bud, while expected to finish a task of pruning, would be a puzzle-headed thing on any estate, and mostly making for mutiny. We would not, however, be misunderstood in what we have said, as if we lightly valued these authoritative deliverances on the "Principles of Tea Pruning." No planter can make himself master of this *brochure* without benefit to himself and the work he directs, and although he may see in it, but a "counsel of perfection" still it is a sure guide as far as he can follow it. He can never expect to reach the proclaimed ideal; but to have an ideal ever with him is a great gain, and to reach forward to it, even in an imperfect and faltering way, has hope and healthy stimulation in it. The price of this scientific pamphlet of 36 pages is only three annas, which places it within the reach of all.

IRISH RAINBOW TROUT FOR JAPAN.

Covered with damp moss in muslin troughs and hermetically sealed in tin, some 20,000 Irish rainbow trout eggs are on their way from Innishannon, co. Cork, to Tokio, for the Japan Exhibition.—*Daily Mail*, arch 21.

"VIOLETS OF ALL SORTS."

—*Tusser.*

If the early records of the Violet were accepted in a too literal sense, its use as a medicinal agent or as a food would lead to the inference that the early Englishwoman was a too devoted utilitarian to have any room in her constitution for mere sentiment. But it is more pleasing to think that the Violet though estimable in its way as the constituent of a salve, or a remedy for headache or neuralgia, or even as an ingredient in the universal pottage so dearly loved by the old-time Englishman, was at the same time no stranger in the plot of plesant flowers. One of the marked characteristics of mediæval times was the strong liking for aromatic and sweet smelling flowers, and we may be sure the Violet was not forgotten among these. At the same time, there is no room to doubt that the Violet is indebted to Shakespeare for its position. He it was who published its perfume—

'Sweet thief, whence didst thou steal thy sweet that smells,
If not from my love's breath ?"

Its purity—

"From her fair and unpolluted flesh
May Violet spring,"

Its fragility—

"Forward not permanent; sweet. not lasting;
The perfume and suppliance of a minute—
No more."

The Violets Spencer painted were of a less noble type. He needed "Primroses greene" to "embellish the sweete Violet." Milton calls it the "glowing," Violet," and misses the plant altogether. In the routine of daily life the flowers were used for strewing sometimes the bridal bed—"Lay her in Lilies and in Violets"; sometimes the grave—

"And Violets and every kind
Of flowers, about the grave
They strawe."

In the garden, along with Camomile and other sweet-smelling flowers, Violets were planted on seats and banks; nor is it at all improbable that Shakespeare had an artificial bank of this nature in view. "Where Oxlips and the nodding Violets grow" and certainly so, the bank of Violets in *Twelfth Night.*

In the *Countrie Farme* and works of a kindred nature, recipes are to be found of method of preserving the flowers of Violets "for salad to serve all the year." Syrups ,conserves, and sugar-plates composed of Violet flowers and sugar, were in much request for lung affections, coughs. and agues, and in every case it was essential to gather the flowers early in the morning previous to sunrise, in order that the virtues and sweet smell should be preserved. In ancient vocabularies, Viola is translated Banwyrt, Hofe, Appelleaf, and a few more names not applicable, as for example, "Clover," which would appear to refer to the cut-leaved form of Viola tricolor: but by the time Turner initiated the recording of English plants and names, it was recognised simply as a Violet. On the other hand, quite a large number of plants other than the Violet bore the name, and some without possessing the slightest resemblance to justify the application. Thus Spanish Violet at one time was popularly applied to Lupinus luteus, both Parkinson and Cole mentioning the fact. Several campanulate flowers also acquired the name, but from a Latin source. Thus, Gentiana pneumonanthe was widely recognised as the Calathian or autumn Violet, and the spring Gentian the blue Violet. Viola Mariana in the same way became Marie or Marian Violet, and Mercurie's Violet, and is Campanula medium. The pretty Campanula hybrida is the Corn: and the yet prettier Specularia speculum, the Five cornered Violet. Then of bulbous Violets there is the Snowdrop, also called Narcissus Violet, and the Leucoïums or Snowflakes. One can sympathise with Turner in his search for appropriate names, when he calls Cyclamen Europæum the Rape Violet, at the period of fairly descriptive of the plant, for then and long afterwards Rape was applied to the Turnip, and Violet was not at all inappropriate. It is, indeed, one of the old-fashioned names that we could ill afford to lose, the more so when its botanical equivalent is all we have left. The Dog's Tooth Violet (Erythronium dens-canis) has a general appearance to the last-named, though it is the root that is the distinguishing part; just as with Dentaria bulbifera, the scaly roots are the medium by which it has acquired the same name. It has also been called merely Toothed Violet. The last-named brings us in touch with the Crucifers, some of which are Violets, but I think in every case from a directly Latin source, just as the Dentaria is. Nor was the designation confined to England, for we find it current in forms modified to the speech of the several countries, in all the chief European nations. Lyte explains that, "under the name of Viola in Latine are commonly comprehended all sortes of floures which be anything like violets"—meaning Viola alba (Matthiola incana) and V. lutea (Cheiranthus Cheiri), the former the white Violet and Guernsey Violet, the latter the yellow and tree Violet, Other plants of this group comprise Hesperis matronalis, rejoicing in a varied assortment of epithets, e.g., Queen's, Rogue's, Dame's Damask, and sometimes Guernsey Violets. When Lunaria biennis was introduced to the notice of botanists it was dubbed the Strange or Foreign Violet but Gerarde, in addition to the name applied to the flowers, supplies a long list of names derived from the white membrane separating the flat seed-vessels. These are "Penny-floure or Money-floure. Silver Plate, Pricke Songwort; in Norfolke, Sattin and White Sattin and among our women it is called Honestie." Honesty is still its common name, but they are mistaken who ascribe its imposition on account of some supposed virtue possessed by the plant of instilling honesty into the minds of its cultivators. The name refers to another kind of honesty, and is indeed merely the popular name of a membrane which the white dividing wall of the depleted seed-vessel of the plant resembles. To Parkinson we are indebted for the knowledge of its tubers having been eaten, though their use seems at no time to have been extensive. Hottonia palustris, the Water Violet, derives its common name from the appearance of the flower to the Crucifers. Pinguicula vulgaris is the Irish or Marsh Violet; and among other plants, the Lily of the Valley may be mentioned as one that narrowly escaped being a Violet!

Reverting now to the true Viola of botanists, we discover among the numerous names of the Pansy those of Horse Violet, three-leaved and Trinity Violet, Autumn Violet, and the less Violet. Of these the two last are of peculiar interest. The latter is also called Banwert and Mygelwort in *Medical Workes of the XIV. Cent.*, and at first sight Gentiana, pneumonanthe would appear to be the plant. But it negatively was of so little importance in medicine as to be the thrust among the other Gentians for its virtues, and among these the "conglutinating" of bones is not to be found. The plant is really the variety of Viola tricolor, distinguished by botanists as "arvensis," and good descriptions of what early French writers call "grosses and menues pensées," are to be found in Liebauld's *La Maison Rustic*, and De Serres' great work on agriculture.

In the *Countrie Farme*, Menue Pensée is translated Autumne Violet, from its flowering late in the year, and its value as a bonewort is fully described. As banwyrt, the old form of bone-wort, it occurs in the oldest vocabularies along with common Violet and Wallflower, the latter being called Viola aurosa. This and the Pansy have an altogether curious relationship, for not only were they described as Banwyrt but they were both known as Tree-Violets a name that the Wallflower still retains in France;

Moreover the two plants had medicinal properties in common, and in due time, as the Wallflower lost its relationship with the Violets, its old name of Heartsease was transferred to the Pansy. As a garden plant, the Wallflower seems to have an older standing than the Pansy, but neither so extended a one as the Violet, These, I think are the more interesting of our Violets, but it must not be supposed that the list is by any means exhausted. The yellow Violet (Viola lutea) of Gerarde is interesting as having been confounded with the Wallflower, and of late years as being, with Viola amoena, the earliest forerunner of our somewhat unhappily named bedding Violas—a noways strange instance of setting aside a common designation for one more pretentious, and certainly less felicitous. —R.P.B.—*Gardeners' Chronicle*, March 28.

A NEW TEA MACHINE.

Mr. Perman is again in the field with a new process for tea making which he has protected in India and Ceylon. He claims the following salient features for his invention which is worked in conjunction with a machine called the 'Expressor' (priced at R450, ex Messrs. McLeod and Co.'s godown.) (1) Stronger and better coloured liquors. (2) Process fully retains the characteristic appearance of the finer grades, particularly the golden tips which are not discoloured in any way. In the lower grades the leaf is turned out much brighter and blacker. (3) 'Expressor' extracts 14% of moisture out of the rolled leaf, consequently the work of the Dryers is decreased with a saving in fuel and labour as a result. (4) In wet weather the 'Expressor' enables any Manager to overcome many of the difficulties hitherto met with in the withering operation. (5) For the manufacture of green tea the 'Expressor' will be found of considerable assistance after the leaf comes out of the 'Steamer' when it is necessary to rid the leaf of all the superfluous moisture prior to rolling. The process is no untried thing we are enabled to say, for it has been at work at several Assam gardens last year, besides Mr Perman's own (Deckajulie Tea Estate) where complete success attended the introduction of the press system of manufacture, the teas showing considerable improvement in quality and style with a corresponding increase in piece for better value. Mr. Perman by its aid was able to reduce the temperature in the Dryer he used and to dispense with the services of one firing machine throughout the season. It will be seen that the process thus makes for economy and good quality being assured is therefore a step in the much desired direction.—*Indian Planting & Gardening*, April 4th.

PRODUCTION OF WEST INDIAN TOBACCO.

The following table, shewing the average annual production of leaf tobacco, cut tobacco, cigars and cigarettes in each of the undermentioned West Indian islands, is quoted by the *Board of Trade Journal* from a recent report by the Belgian Consul-General for the Antilles. One kilogram, we may add, equals 2 1-5th lb avoirdupois:—

	Leaf Tobacco. Kilogs.	Cut Tobacco. Kilogs.	Cigars. Kilogs.	Cigarettes. Kilogs.
Cuba	...20,000,000	250,000	1,200,000	10,000
Porto Rico	... 2,800,000	—	—	—
St. Domingo	... 8,000,000	—	—	—
Jamaica	... 20,000	—	14,000	4,000
Total	...30,820,000	250,000	1,214,000	14,000

DISEASED COCONUT PALMS.

A disease, the cause of which is not stated, is doing some damage to the coconut trees in Jamaica. The following description of the disease is taken from the Jamaica *Gleaner* for January 12, 1903 :—The heart leaves drop out and the leaves, which are usually upright, fall down. When a tree in this condition is cut down the heart is found to be one mass of bad-smelling, decaying vegetation, while the root and trunk are in perfect condition. The disease often attacks the flower spikes with the result that many of the coconuts drop off while still young. This is frequently preliminary to the disease getting to the heart leaves, after which nothing can save the tree. In the *Journal of the New York Botanical Garden*, Vol. IV, pages 4-7, Mr F S Earle gives an account of his recent visit to Jamaica. He examined coconut trees suffering from what is apparently the same disease as that described above. Mr Earle attributes the disease to bacterium. He points out the necessity for the prompt cutting and burning of all infected trees, and says that 'it is claimed by some planters that a certain green skinned variety of coconut is less liable to this disease than the reddish and yellowish kinds.' If this is confirmed there is a possibility of raising a resistant race of coconuts. A disease, similar in many symptoms is the subject of a paper in *Bulletin No. 38, New Series Divison of Vegetable Pathology and Physiology* of the United States Department of Agriculture. The disease appeared among the coconut palms in the province of Santiago, Cuba. The first indications of trouble was the falling of the young fruit. Shortly after the larger nuts dropped and the leaves assumed a yellowish colour. Within a month all the large lower leaves droop and fall, leaving only the pale, sickly tops which blow over at the first heavy wind. Here also from the root to within a few inches of the top, the trunk was found to be perfectly sound. Perforating the entire upper part of the trunk for 2 to 12 inches downwards was found the mycelium of a fungus, the fruiting bodies of which appeared as small white spots on the underside of the leaves. These might easily be mistaken for the scale insects (*Aspidiotus*) often found there. The fungus was identified as *Pestalozzia palmarum*. On breaking open the lower leaves and cutting the centre of the green growing part open, the heart is found to be one putrid, offensive-smelling mass. It was found that the best way of preventing the spread of the disease was cutting down and burning the diseased palms. It is not necessary to burn the entire trunk, but only the top, with a couple of feet of the upper end of the trunk. In order that this preventive measure may have its greatest effect, it is absolutely necessary that united action should be taken. It would obviously be futile for the proprietors of one estate to eradicate the disease within its limits, if the owners of neighbouring estates omit the precautions and allow the disease to multiply and send its spores abroad to the others. These two diseases are so similar in their symptoms that it would seem not improbable that they are really one and the same. This however, cannot be definitely settled until something more is known of the cause of the disease in Jamaica. We trust fuller information will be obtained as the result of the work which we understand Mr F S Earle has in hand at the New York Botanical Garden, and of the field experi-

ments of Mr W Cradwick of the Department of Agriculture, Jamaica.—*Agricultural News*, Feb. 28.

TEA PRUNING.

(*Remarks on Agricultural Ledger No. 1 of 1903.*)

Why the subject of pruning should have been matter for a number of the Ledger is somewhat obscure. Is it supposed that number of persons who have tea to prune are likely to require the help of this oracular pamphlet? Or is it sought to standardise the operation? Finally is it intended to be a fund of information for laymen who are shareholders in tea to throw piecemeal at the heads of practical men who depart from its precepts? It is probably none, or all, of these—a statement of the scientific side of the case, and as such can only have an academic interest to practical men. Put forward by two such men who between them use up half the alphabet on the title page, criticism is half afraid to speak up, and the Ledger might have been suffered to pass into the obscurity of dust and cobwebs but for its too evident effort at belittling the mental proportions of the average planter. Like all who dabble in tea affairs, the authors have fixed their minds on pruning as a *most important operation*. Our authors go further, however, and give their opinion in favour of its being "*the* most important operation in the tea garden." Here we have the apology for their attention to the subject, and after this deliberate judgment who will say where manufacture or even the planting of the bush itself stand in relative importance? But probably the next Tea Ledger on the subject of, say, the weeding of nursery beds, will equally use the time-honoured phrase, and the industry will get a level keel again. The palmy days of the industry were not modelled upon such deliverances, and whatever success our fathers had they achieved without getting lopsided views of the eternal importance of this or that; they went, it may be supposed, for them altogether. Irresponsibility is writ large over this epoch-making Ledger. But that is not its worst fault. The amazing assumption that planters are generally not up to their work or inept in carrying it out is what the industry cannot take from even such valuable men. That variety of opinion exists is a healthy sign of coming and existing grace. As to "principles" which this Ledger is designed to lay down, what in the ultimate position are they? And can they not be stated without calling in question the competence of those engaged in the actual work? Verily, "Behold, ye are the people and wisdom shall die with you." Have our very superior friends ever tried to prune a bush on the principles laid down, *i.e.*, 45 degree cuts just over a bud and all useless wood to be carefully removed? It takes 10 to 15 minutes to do it working hard. Now working moderately hard eight hours a day, a man would on this reckoning do 40 to 60 bushes and the cost would be R11 a acre; one man would do an acre in about even weeks, and you would require a man for every acre of your garden, which clearly is impossible. And just in this sort of thing lies the crux of the whole matter, that the planter does as well as he can with the means at his disposal, and must not be called names or have it suggested that he is an amateur at making his bread and butter. Practice is often at variance with the principles or science; and the reasons for any departure in this particular case are well able to bear examination. All things considered, it seems likely we shall still have to go over the garden and cut it some how into shape, though hereafter we shall not call it "pruning" without visions of Sir George Watt and Mr. Mann and their clever, thoughtful Ledger. After all there is more in the management than they have yet dreamt of. O. P.

—*Indian Planting and Gardening*, April 4.

TROUT IN THE NILGIRIS.

FRY TO BE IMPORTED FROM CEYLON IN CASKS.

I hear that there are several promising trout in Snowdon Pond and no more in the stream near Emerald Valley in the Kundahs. Of the fate of the fry that were floated out of the nursery pond on the Pykara River last year there is no news, but it is very probable that many of them went up stream and these may yet be heard of again. The suggestion of the Nilgiri Game Association that Major Bagnall should make enquiries with a view to procuring a fresh supply of ova when he went to England on leave last year has come to nothing. A scheme which has every promise of success, however, is now being attempted by the Association. It is well known that the Ceylon Association has been very successful in rearing rainbow trout in the streams there, and the District Forest Officer here is now in correspondence with the Association with a view of bringing over fry from Ceylon in casks. If an agreement can be arrived at it is intended to bring over healthy fry, from five to six inches long, and there seems to be a great probability that the Nilgiri Association will be able to acclimatise, at any rate, a fair percentage of them in local waters.—Ootacamund *Cor.*, *Madras Mail*, April 13.

CAMPHOR PRODUCTION IN CHINA.

(*Daily Press, 21st March.*)

One of the great staple products of Formosa during its occupation by the Chinese was camphor, and a considerable proportion of the export was in the hands of foreign firms until after the cession of the island to Japan. Under Chinese administration there was a great deal of waste in the production, and we believe that the Japanese have been attempting the conservation of the camphor forests. The loss of this important export has been felt by China, and it is with no little satisfaction that the Chinese are able to announce that an experiment in the production of the tree in the province of Hunan has been attended with great success. It is stated that the soil of Hunan has now been found to be well suited for the extensive cultivation of the camphor tree, and the inhabitants are enthusiastically planting it wherever they can. A Changsha letter reports that there are now, in consequence of this industrious planting, innumerable camphor trees several feet in diameter in the province, and it is expected that with care it will be possible for Hunan to soon be able to export annually several thousand piculs of the

drug. This is a step in advance, and may perhaps go some distance to reconcile the Chinese Government to the loss of Formosa. The market is at present dependent chiefly upon the supply from Formosa, and in consequence the price is maintained at a high figure. Camphor is not the only product that might be introduced into the eighteen provinces and the Viceroys might profitably institute enquiries as to what new products the soils and climates of their respective provinces are best calculated to reproduce. Now that tea has practically ceased to be an export except on a comparatively small scale, it would be well to endeavour to find out other articles of commerce that could be successfully and profitably raised to take its place as a paying export and to redress the balance of trade, now so largely against China. With the heavy indemnity to be paid to the Foreign Powers, it is a matter of vital import to China to find new articles of export. And unless sustained efforts be put forth in this direction, it is tolerably certain, spite of the foolish optimism of the opponents of a gold standard in China, that the exports of this great Empire will remain stationary, or at any rate barely maintain their present position.

PROTECTED PEPPER.

Pepper from French Indo-China pays lower customs duties on entering France. In other words the import duty on colonial pepper there is fifty per cent. less than on the foreign article. This protection has so largely stimulated pepper-growing in Cochin-China among Europeans and Chinese that the French market is glutted with that spice from the Colony. Growing the article there has become unprofitable. The European planters seek to ward off heavy loss by starting an agitation against Chinese pepper-planters being allowed to share in the preferential tariff rates. This simply means the ruin of the Chinese planters. The prevalent opinion is that the planters should hang together, and should seek to meet the bad times by turning to other markets and by resorting to improved business methods.—*Straits Times*, April 2.

CACAO.

EXPERIMENT PLOTS AT GRENADA.

The following summary is taken from the report of Mr M McNeill, Agricultural Instructor at Grenada, on the cacao experiment plots in that colony. The information given refers to the period from October 1st 1901 to September 30th 1902. The report is published in full in a recent issue of the Grenada *Government Gazette* :—

The following is a comparative statement of the yields for 1900-01 and 1901-02 :—

		1900-01 lb wet cacao.	1901-02 lb wet cacao.
Vendome	(one acre) ...	421	1561
Colombier	(do) ...	564	117
Vincennes	(half acre) ...	340	879
Nianganfoix	(one acre) ...	3335	3989
Bellevue	(do) ...	1611	2087

The yield for Vendome and Vincennes is three times greater than last year, about double for Colombier, with a decided improvement for Bellevue aud Nianganfoix.

Average cost of working per acre for 1901 02, including cost of manures, cartage, etc., has been £5 17s 0d.

The average cost of production per cwt, allowing for wet cacao to give half its weight in dry, on which, however, there is at present wide differences of opinion has been 12s 9d.

Summary of manurial results :—

	Vendome.	Vincennes.	Colombier.	Nianganfoix	Bellevue.	Totals.
Basic slag and sulph. potash	522	279	340	1109	561	2811 lb wet cacao
Basic slag and sulph. ammonia	426	252	252	1202	613	2745 lb wet cacao
Basic slag and nitrate of soda	251	200	307	1021	420	2199 lb wet cacao
Sheep or pen manure	362	148	218	657	493	1878 lb wet cacao

Basic slag and sulphate of potash sections have taken first place in three plots and second place in two.

Basic slag and sulphate of ammonia sections have taken first place in two plots, second in two, and third place in one.

The total yield for the basic slag and nitrate of soda sections has been better than that for the sheep or pen manure sections.—*Agricultural News*, Feb. 28.

INDIAN TEA AND PROSPECTS.

We call attention to the long and instructive Report of the leading Calcutta Tea-broking house for the season 1902-3—see page 759. It will be observed how much importance is given to the restriction of crops by fine plucking, and to the need of supporting the Calcutta market as a check on that of London, and also to the value of encouraging green tea. For the coming season, the tea crop prospects are favourable ; but much depends on weather and labour supply; and the expectation on the whole, is of a prosperous year for producers, if due care is taken in the directions pointed out.

ASSAM PLANTERS' PURCHASE IN THE NILGIRIS.

A group of estates near Colacumbay has just been sold to two tea planters from Assam. The properties consist of the Terramia, Pembroke and Carshalton estates, comprising about 600 acres of land, of which about 200 acres are under tea and 100 acres under coffee. It is said that the purchasers intend to open out all the uncultivated land in tea and make a big concern. It is significant that planters long resident in that well-known tea-producing district should leave it to settle on the Nilgiris, and one is inclined to seek the reason. It must be that the labour difficulty in Assam is preventive of any profits being made in these times where large advances have to be made to the coolies, R75 per head and even more, and where Government interference is so irksome. The planters here will no doubt hail the advent of these wellcomers, as they will be sure to carry out economical methods and keep down the rates of pay, which have a tendency to rise of late years, and could undoubtedly run high but for the fall in voices.—*Indian Planters' Gazette*, April 11.

COCONUT CULTIVATION IN CEYLON AND FIJI.

Mr. Edward McCarthy, - an experienced coconut planter now of the Rajakadaluwa district, Chilaw, sends us a very instructive and useful letter in reference to the bearing powers of the coconut palm and the foolishness of drawing deductions from the experience of one or two trees, or again of supposing that all small nuts are to come to maturity,—or that, once again, a head of 100 or more small nuts will give more oil or copra than one of 50 to 60 large, fully-matured nuts. All these qualifications indicate the directions in which, alone, sound comparisons can be made. Mr. Tarte of Fiji and any other planter proud of his prolific palms, must not only tell us of the number of nuts per tree and of trees per acre; but also the weight of the nuts, of the resulting copra, or oil, *per acre*. Then indeed shall we be in a position to institute a fair comparison with the best plantations in Ceylon.

MATALE PLANTERS' CASE FOR THE COCOA THEFTS COMMISSION.

(*Extracted.*)

Cocoa stealing has continued in a greater or less degree ever since Cocoa came generally into bearing some 14 or 17 years ago, the question of degree coinciding with the variation in prices, thus from 1889—1893 prices were at their highest and stealing was rife, so that after considerable agitation a Commission was granted in 1895. But in the meantime in 1894 prices fell until Cocoa was almost unsaleable and thefts also fell away, figures and data had not been collected so that when the Commission sat after a year in which there was little or no theft, there was no proper evidence to place before it, and although men were prepared to swear that they had suffered severely from thefts some 16 months previously, they had to admit that at the present time they were not suffering in that way. Sufficient stress not being laid on the fact that they were not robbed because it was hardly worth anyone's while to rob them. A record of thefts had not been kept and the fact of the absence of specified cases, was held by the Commission of 1895 to prove that a sufficient case had not been established. A Trial of rural police was however recommended and failing that, a Receivers Ordinance was to be tried. The rural police was given a fair trial. The cost of them is small, planters had every reason to adopt this form of protection if it was found efficacious, but it was not so. Such success as was attained was due to the personal influence brought to bear on the headmen by the Government Agent and his assistant. This is of course so far satisfactory, but it is not law and past experience has taught us that individual effort is not the proper thing to rely on in such a case. We may mention that in all reports on rural police, the cost of Estate Watchmen is ignored whereas the cost of them was very considerable; on one Group which came under the system, being about R500 per month.

We have to point out that the Assistant Government Agent of Matale-after two years' experience of cocoa stealing, and of the active management of rural police, pronounces himself at the end of 1901, in the most unqualified way as in favour of special legislature, taking the form of a Receivers Ordinance, plus certain restrictions on cocoa growers. This paragraph was framed into a resolution which was brought before the Planters' Association of Ceylon by the Chairman of the Matale Planters' Association, and carried unanimously:—

SPECIAL LEGISLATION FOR CACAO STEALING.

"We, the undersigned, are of opinion that the law, as it now stands, is not sufficient for the protection of Cacao-proprietors. We would, therefore, respectfully suggest some amendment of the Praedial Products Ordinance, which, while continuing to make the possession of *Green* Cacao without a satisfactory account of such possession an offence, might also provide against the dishonest possession of *Ripe* and *Cured* Cacao. We should also be grateful for any protection against receivers" which the Government may be disposed to "grant."

This embodies the demands of both European and Native planters. It is well known that natives suffer severely, and often pick their cocoa before it is ripe to save it from theft. Testimony as to a specified case of this can be given by Mr J B Tennant, Mr Lyall, and the Assistant Government Agent of Matale.

There are in Matale 7,000 acres of European Estate cocoa in bearing. As to the acreage of native owned cocoa, there is some uncertainty. It is given by the Assistant Government Agent of Matale as 2,200 acres, there is no Government record of the native acreage in bearing. According to Government figures there would be 1,500 acres of native owned cocoa in bearing, and according to the planters' estimate there would be 1,000. The Matale cocoa is despatched by the Railway, and from figures very kindly given us by the General Manager, C.G.R., we obtain the following results:—

1902—Despatched by Europeans from Matale, Ukuwella and Malvern Stations cwts 11,465, to which we add cwt 1,137 sold by Europeans to Natives, making a total of cwt 12,602, giving an average of cwt 1 80 per acre on European Estates.

	Cwts.
Despatched by natives from the same stations	4,366
Less purchased from Europeans	1,137
	3,229

Giving an average on Government figures of 2·15 per acre, and on Planters' figures of cwts 3·1 per acre.

We wish to say that European owned cocoa is easily distinguished by the names of the Estates being marked on the bags and by its being consigned to well-known firms in Colombo. European owned cocoa is not forwarded by any Native Agency at the Stations mentioned. The native gardens taking a liberal estimate, may perhaps have been cwts. 1,500, leaving cwts. 1,729 totally unaccounted for.—And this is a year when the Rural Police system has been worked for all it is worth.

When Cocoa Planters first approached Government on this subject, their case was dismissed by the then Colonial Secretary by the curt remark that cocoa could afford to pay for its own watching. Such an utterance shows ignorance of the subject. Cocoa Planters do not and never have asked Government to relieve them of the duty of watching their Estates, what they do ask is that the law should

NOT ALLOW UNDOUBTED THIEVES TO ESCAPE.

On another occasion one of his watchmen was stabbed, and his gun stolen. Many other instances could be added. Mr Martin has tried Rural Police

and found them worthless, and now has to get men from the Punjab at a very large expense to protect his Estates. It is true that the Cocoa stealing cases in the Matale Court increased in 1900 as compared with the two previous years by 50 per cent but it is not correct to say that they decreased in 1901. The very reverse is the case, the figures of 1901 as compared with 1900 show an increase of some 25 per cent. Mr Dunuwilla is, we believe, a Cocoa planter amongst other things, and he is singularly ill-informed as to that branch of his business if he does not know that the reason that thefts decreased towards the end of the autumn's Crop of 1901-2 was that Cocoa towards the end of that crop become practically unsaleable, the native traders were enormously overstocked and refused to purchase on almost any terms. Therefore when he says that towards the end of crop thieving fell away and gives the headmen and the rural police the full credit of this decrease in theft, he will get few people who know anything of the matter to agree with him; further, he writes as if the rural police system applied to the whole district whereas it only applied to some 10 or 12 per cent of it. The chief reason of the decrease in theft was the fall in the value of Cocoa. And now we have to deal with the statement made by Mr Dunuwilla against planters that thefts are common because planters employ "Dishonest Watchmen." Twice Mr Dunuwilla has advanced these very general charges against the planters, and each time has only been able to bring forward one case to prove what he says, and neither of these cases as stated by him will, we submit, bear investigation. That planters whose living depends on their crops should deliberately select "dishonest watchers" is at variance with common sense, and with the true facts of the case. Planters select the best men they can get, they do not draw upon any particular nationality. Sinhalese, Tamils, Malays, Moormen, have all been tried, the best men of their class are selected, and good wages are given. If Mr Dunuwilla would tell us where amongst his countrymen or the native races of Ceylon we can find passably honest watchmen, he would do something towards proving his case.

We submit a list of the

AMOUNTS SPENT ON WATCHMEN AND PREVENTION OF THEFTS

by estates in Matale and elsewhere. Taking the yield per acre, the value of same, the expenditure per acre on estates, and the Railway figures showing what was sent away in last year, we are prepared to show that Matale proprietors have to spend 10 per cent of their income in trying to protect the rest. We instance a group of five Estates under the same management where 22 per cent of the profits from the cocoa in bearing have been spent in protective measures. We instance an Estate where about 70 thefts occurred last year. We draw attention to cases instanced by Mr. Garrick and Mr. Wilkinson. We suggest that the following witnesses be examined :—

R W Bolling, Longville; Gilbert James, Katugastota; C M Krickenbeck, Matale North; J A Mac Allister, Pansalletenne; L R Rudd, Marakona; H D Garrick, Ukuwela; W Lyall, Alloowihare; J Anderson, Banderapolla; James R Martin, Yattawatte; J A Burmester, Warriapolla; Harry Storey, Warakamura; the Hon. the Colonial Secretary; C H T Wilkinson, Kondesalle; Dan. Joseph, Matalè; A H Don Bastian De Silva, Matale; the late Arachi Pattagedera, Wattagama; Dingeri Banda Lukam, ambawella.

We suggest that the Commission procure from Government the cost of the rural police system *to Government*, including not only rural police but headmen's wages and rewards, amounts paid Government watchers and every other expense incurred. We finally submit that cocoa cultivation deserves consideration at the hands of Government. Crops are small, prices are bad, and the cost of cultivation has been largely increased by canker.

	Acres in bearing.	Cost of watch, etc.	
J B Tennants Group of Estates..	347	480	00
North Matale Estate ..	733	1993	75
Warriapola	600	925	10
Kahawatta	100	320	00
Arangalla and Arduthie ..	231	240	00
Marakona Group	400	879	16
Yattawatta	650	1973	62
Ross	200	500	00
Hylton	250	500	00
Laxahena	100	400	0[illegible]
Dangan	80	350	00
Hampshire	55	202	01
Ukuwela	74	394	50
Wavena	10	60	00
The Grove	250	190	00
Asgeria	153	650	00
Sudugama	300	746	82
Strathisla	170	184	33
Keppitigalla	600	1274	89
Pitakande	84	120	84
Bandarapolla	220	446	33
High Walton	120	...	
Aloowihare Group	378	1685	71
H. Bell's Group	290	292	74
Pansalatenne	90	240	00
Kuduwela	187	402	00
Morankande	200	760	00
Pattiagalla	240	600	00
Katugastota	500	2927	00
Kondesalle	500	1700	00
Pallekelle	3170	3000	00

The Matale Police Court figures for Cocoa stealing are as follows :—

1898 ..	37 ..	14 convictions
1899 ...	37 ..	18
1900 ..	55 ..	37
1901 ...	67 ...	37*

*Four absconded.

Figures collected by the Matale Planters' Association point to 35 per cent only of Cocoa thefts being taken to Court, the uselessness of prosecuting under the existing law being the reason that so many thefts are allowed to go unnoticed.

We wish to point out that the legislation we ask for is nothing new. In Ceylon at one time Cinchona was largely cultivated in the Central Province. It was much stolen and it was found that the most dangerous receivers were the owners of small gardens with a few Cinchona trees growing in them, as stolen bark was then openly sold as the produce of these gardens and to check this the Ordinance No. 9, 1885 was amended as follows in 1886 "Whenever......the bark whether of the branch, root or stem of the Cinchona tree shall be found in the possession of any person who is unable to give a satisfactory account of his possession thereof, such person shall be deemed and adjudged of an offence and shall on conviction be liable to the punishments.........under section 368 C P C." This legislation stopped the theft of Cinchona bark and never was known to injure any honest man—and this is the species of legislation that European and Native Cocoa planters have united in demanding.

We would draw the attention of the commission to the Mauritius Ordinance for the suppression of Vanilla theft which is on the same lines as our Cinchona Ordinance.

Also to the Grenada Ordinance for the suppression of Cocoa and Nutmeg theft and the amendments to the same which bring it exactly into line with the Ceylon Cinchona Ordinance.

Also to the statement in the Administration Report for the Central Province 1901, page C 35, to the effect that, the old Ceylon "Coffee stealing" Ordinance and the Madras Act VIII of 1878 "were found to be inoperative to a great extent." "The reason for this has been stated by the Hon. the Chief Secretary to the Government of Madras. They impose no adequate check upon the dealings of receivers of stolen coffee who own small patches of land planted with coffee in the vicinity of large estates and account for the possession of large quantities of Coffee by the statement that it is grown in their own land." This is precisely the difficulty that meets any purely receiving ordinance in Ceylon. We would suggest to the Commission that the Hon. the Colonial Secretary be asked to state from his West Indian Experiences, what nature of laws exist there, for the suppression of Cocoa theft and what their effect has been. We would also suggest that some influential natives be asked to give their opinion on the proposed legislation to the Commission and would mention Mr Dan. Joseph and Mr Bastian de Silva. We submit this case to the Commission and would be glad to attend in the form of a deputation and go over it carefully and give evidence as to the points raised.

[*Correspondence in connection with cocoa thefts commission and rural police.*]

No. 307.

COCOA POLICE.

Police Station, Matale 11th February, 1903.

Sir,—I have the honour to request that you will be good enough to inform me whether you were satisfied with the conduct of the Cocoa Police employed for the protection of your Estates during the past season, and whether you consider that they were of assistance in checking thefts of cocoa.—I am, Sir, Your obedient servant,

(Sgd.) E. B. ALEXANDER, A. G. A. (Police.)

D. E. RODRIGO.

The SUPERINTENDENT, Alloowehare Estate.

Alloowehare Estate, Matale, 16th, Feb., 1903.

The ASSISTANT GOVERNMENT AGENT, Matale.

Sir, I am in receipt of yours of the 11th instant, requesting me to give my opinion as to whether I was satisfied with the conduct of the Cocoa Police for the past season, and whether they were of assistance in checking thefts of cocoa.

In reply to this, I have to state . . . . that the Police did their work well, and only on two occasions (at the commencement of the Season) did I find them absent from their posts. On all other occasions I found them at work, and I must say the headmen attended to their duties in a very satisfactory manner. I put down the zeal of the headmen, and the constant attention to duty of the Police in a great measure to your very close supervision, and to the co-operation you received from the Ratemehatmeya and Korale under you,—these latter were closely under your control, and they in their turn kept both Constables and headmen well up to the mark. I would venture to point out that, considering the majority of the before-mentioned headmen were busily engaged guarding my cocoa from 4 to 7 a.m., and again from 4 to 7 p.m., they were unable to do justice to their other numerous duties in their districts. Under the condition on which the Cocoa Police worked during the past Season, I have no hesitation in saying that they did their work well and prevented thefts of Cocoa. —Yours faithfully, (Sgd.) WILLIAM LYALL.

P.S.—The headmen guarding the Cocoa were paid by Government for this work. W. L

COCOA THEFTS.

Katugastota Estate, 18th March, 1903.

My dear Martin,—In reply to yours, I have pleasure in handing you a few facts which I hope will go to help us in proving that we want something better in the way of protection in cocoa. This place is a scattered one, and lends itself more to robberies perhaps than places more compact, but that does not lessen the fact that we want better protection but proves that the present law is not enough. The villagers will not steal unless they can get rid of the stolen cocoa, and the receivers are the ones to get at. They give one cent per pod to people who bring them, and if they don't agree to those terms they threaten to expose them. I think if we get a stronger law, and the receivers made to account for the cocoa they receive, it would stop a good deal of it. In my opinion it is no good sending a low-caste Sinhalese to prison or fining him much, he is received with open arms when he comes out of jail by his friends, and they do not attach any shame or disgrace to it. The better class and good caste Sinhalese do not steal I think. It is often the case that the same man has been convicted and sent to jail for stealing several times, that goes to prove that he does not fear going to jail.

No. 1.—I should say I had quite 70 thefts last year, but fortunately none of these were big ones owing to good work of my watchmen, which prevented large robberies,

No. 2.—I caught and took to Court 31 cases.

No. 3.—I got 20 convictions and 11 dismissals.

No. 4.—The Watchmen cost the Estate R2,427 and Legal Expenses cost R500.

No. 5.—I consider there were cases dismissed which ought to have been convicted.

Yours Truly, GILBERT JAMES.

March 22nd, 1903.

My dear Martin,—I will willingly do anything I can possibly do to help you and the cocoa theft Commission.

I have sent for a Native Proprietor, a neighbour of mine, who is perhaps as honest as natives are made. He may be able to give you some help by suggestions, can the cocoa commission not send out Forms with leading questions and headings. An example of one theft I detected was, I was losing cocoa from one of my far Fields. We could not detect anything for months. By a big bribe I received information where I might find some of my cocoa drying. I went and there was quite a beaten track towards some Lantana a few chains from my boundary. Into this there was a hole about 18 in. wide by about 18 in. high, through which I had to crawl on my stomach about 10 yards long: arrived inside was a cleared space (a barbacue well stamped) not noticeable from outside as it was surrounded by thick Lantana. Cocoa was drying and there were Sacks and Scales on the spot. We remained in ambush. After a while a Tamil Proprietor and two Moormen crawled in, whom we captured, and handed over to the Arachchi. Panwila was then my Court. Owing to being ill I had to postpone the case several times and then having Pleuro-pneumonia I had to leave the island. The case was dismissed as the P. M. would not let my Conductor or *Locum Tenens* to go on with the case, My watchers cost me over R1,300 per annum and expenses, battas etc. to witnesses about R400. We have detected about 18 thefts but had only about 4 convictions. I have now a case pending for 5th April. The accused's previous convictions here are (1) 1 year, (2) 6 months, (3) 3 years. The case pending is District Court,

This year's crop is about 2,200 cwt. Average Crop about 1,500 cwt. Expenditure about R35,000. Crop stolen about 10 per cent. If I can give any further help, I will willingly do so and am grateful to the Commissioners.—Yours sincerely,

C. H. T. WILKINSON.

PLANTING NOTES.

AGRICULTURAL PROGRESS IN FORMOSA.—The Japanese are going ahead in this fine island. An Agricultural Experiment Station has just been established at Taipoli and Mr. Y. Fujini, the Director sends an order for the "Tropical Agriculturist" to be forwarded.

ORANGES.—The Florida orange crop for the past season has totalled 800,000 boxes, being 300,000 less than last season, but growers have not suffered through the shortage, owing to better prices obtained. The cause for the small crop was the drought which occurred in the spring just at the bloom of the oranges; and the red spider partially destroyed the crops in some groves; while the very heavy rains that came later did not better matters. This is something like the experience here this season; dry weather in June decreased the quantity and size of the fruits in St Ann and Manchester. Yet market results have been good. The grade of fruit all over has been improvement, better packing, grading and handling generally, with great room for greater care still.—*Journal of the Jamaica Agricultural Society* of February.

THE CEYLON TEA AND COCONUT ESTATES COMPANY—which has, since its inauguration in 1896 been worked at a loss has, we are glad to see, completed this year's working with a profit of R4,377·22. No dividend was declared at the last annual meeting, but the report when compared with last year's statement is decidedly encouraging. This year the tea crop was slightly over that of last year, while the prices obtained were ·60 cent better. The coconut trees gave 707,034 nuts as against 516,008 in the previous year. Rubber too has now begun to yield a return and 55 lb. have been sold at an average price of R2·50 The Company have 50 acres under rubber, so that considerable revenue will soon be obtained from this source.

COMPANY REPORTS.—The annual reports of a number of Ceylon Tea Companies registered in London appear elsewhere. Mount Vernon, as reported by wire, has paid a dividend of 8 per cent for the year and in addition has placed to reserve £200 and carried forward a similar amount—on the whole, considering the unsatisfactory season, a very good first result. Yatiyantota Company pays 5 per cent for the year and writes off £1,000 for cost of properties &c. and carries forward £2,029. The Punduloya Tea Company has had one of the best years it has yet experienced in its six years of existence. It pays 5 per cent as against 4 last year, places to reserve for depreciation &c. £2,250 and carries forward a balance of £225 15s. The Augusta Tea Company closed their year with a credit balance of £652 12s. Beside paying Debenture interest and other fixed charges £100 is written off machinery account, and £41 5s 3d is carried forward. Balmoral Company has had a very successful year and pays 10 per cent. A balance of £766 7s 3d is carried forward.

OLD TREE STUMPS.—To remove old stumps, a correspondent to the *Country Gentleman* gives the follwing :—'Get a 2-inch iron pipe, 8 feet long; have a steel point welded into one end of it. With a sledge hammer drive this under the stump as far as may be necessary. Drop half a stick of dynamite into the hole thus made, and tramp earth upon it until the hole is filled; then light the fuse. The stump will be lifted entirely out of the ground with no earth adhering to it, so that it may be burned the next day.'—*Hawaiian Planters' Monthly*, February 15.

THE EUCALYPTS.—Mr. J. H. Maiden, Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney has begun a very valuable work in a critical revision of the Genus Eucalyptus, part I, (with four plates), has just reached us. It is a quarto in large type clearly printed and covers some 50 pages, the description and four plates being devoted to "Eucalyptus Pilularis." The Contents are :—

Synopsis :—Preface —Variation in the Genus; Doubtful Species; Non-Eucalypts described as Eucalypts; and Works Consulted.

1. Eucalyptus Pilularis, Smith :—Description, Notes Supplementary to the Description; Synonyms (with descriptions), Notes on the Synonyms; Range, Typical Form and Varieties; Affinities; and Explanation of Plates.

From the preface we quote :—

During the 20 years that have elapsed since the publication of Mueller's 'Eucalyptographia,' which added valuable information to Bentham's masterly account of the genus Eucalyptus in the *Flora Australiensis*, we have obtained a large accession of facts. It seems to me that the time has arrived when these additional facts should be incorporated with the labours of the old workers. I have spared neither time nor expense to obtain access to the types. I have spent many years in field observations on the genus in every State of the Commonwealth (though, of course, particularly in my own State of New South Wales), and thus have endeavoured to secure what is an essential qualification for the study of this protean genus.

A very important departure in a work of this kind is the following :—While expressing my opinions as to affinities, synonyms, etc., I shall in all cases give the original descriptions of the species whether considered to be synonyms or not. In this way my readers will be able to weigh the evidence for themselves, and, if they do not concur in my conclusions, they will at least be placed in possession of the data on which they are based.

The genus Eucalyptus is the most important in Australia. The individuals which comprise it are all pervading, while the number of species and varieties is very large. As the work proceeds I will give my views as to the grouping of the species. The present part contains much prefatory matter referring to the genus. Then one species is taken in detail, and the other species will be treated in a like manner, the facts being grouped in the same way. The rapidity with which this work can be issued depends mainly on the plates; I have only the partial services of one artist.

The future number of this valuable work will be eagerly looked for.

TO THE PLANTING WORLD.

Seeds & Plants of Commercial Products.

Hevea Brasiliensis.—Orders being booked for the coming crop August-September delivery 1903, booking necessary before the end of April, quantities of 100,000 and over at special low rates. Plants available all the year round, 100,000 and over at special low rates. A leading Rubber planter in Sumatra, who purchased 50,000 seeds in 1899, and 100,000 in 1900, writes us, under date 15th November, 1900:—"I received your letter of 20th October, from which I learn that you added another case of 5,000 seeds to replace the loss, &c. I am satisfied hereby, and even after this adding I am satisfied by the whole delivery of this year." Special offer, post free on application.

Castilloa Elastica.—True superior variety cultivated in Mexico, seeds from specially reserved old untapped trees. Orders booked for October-November delivery 1903, immediate booking necessary; large quantities on special terms; Plants in Wardian cases.

A foreign firm of Planters writes under date 11th October, 1901:—"We beg to enquire whether you would procure us 100,000 Castilloa seeds, in which month we might expect them, and what would be the average price." Special offer, post free on application.

Manihot Glaziovii.—Seeds and Plants available all the year round, 100,000 and over at special low rates. A Mexican planter in sending an order for this seed wrote on the 22nd August, 1900:—"If they arrive fresh and germinate easily I may send you larger orders, as they are for high ground where the Castilloa does not thrive."

Ficus Elastica.—Seeds available in May-June; booking necessary before the end of March; also plants.

Mimusops Globosa (Balata) wood of the tree is much sought for buildings, fruits sweet like a plum and eaten, oil from seeds, said to yield as much as 45 lbs. of dry rubber per tree per annum, the milk is drunk and when diluted with water used as cow's milk, grow from-sea-level up to 2,000 feet, orders being booked for seeds and plants, price on application.

Cinnamomum Zeylanicum (Cinnamon superior variety).—New crop of seed in April to June; booking necessary before the end of February, also plants.

Coffee Arabica-Liberian Hybrid.—A highly recommended leaf-disease resisting hardy new variety of Coffee (cross between Arabian and Liberian). New crop March-April; immediate booking necessary.

A foreign Agricultural Department writes dating 9th September, 1901:—"Please accept our order for 175 lbs. of Tea seed and for 2,000 Coffee beans. In regard to Coffee seed I would say that this will be the first importation made by this department, and we will leave the selection of the varieties to be sent to your judgment."

OUR DESCRIPTIVE PRICE LISTS.

The following six Descriptive Price Lists are now being forwarded with Circulars and special offer of Seeds and Plants of Rubber and other Economic Products:—

1. Tropical Seeds and Plants of Commercial Products, enlarged edition for 1902-1903.
2. Seeds and Plants of Shade, Timber, Wind-Belts, Fuel and Ornamental Trees, Trees for Road-sides, Parks, Open Spaces, Pasture Lands, Avenues, Hedges, and for planting among crops (Tea, Coffee, Cacao, Cardamoms, &c.)
3. Seeds and Plants of Tropical Fruit Trees including Mango grafts.
4. Bulbs, Tubers and Yams.
5. Orchids—Ceylon and Indian.
6. Seeds and Plants of Palms, Calamus, Pandanus, Cycads, Tree and other Ferns, Crotons, Roses, Dracinas, Shrubs and Creepers.

Special Arrangements made with foreign Governments, Botanical and Agricultural Departments, Planters and others for supplying seeds and plants of Commercial Products in larger quantities.

"SOUTH AFRICA."—The great authority on South African affairs of 25th March, 1899, says:—"An interesting Catalogue reaches us from the East. It is issued by WILLIAM BROTHERS, Tropical Seed Merchants of Henaratgoda, Ceylon, and schedules all the useful and beautiful plants which will thrive in tropical and semi-tropical regions. We fancy Messrs. Williams should do good business, for now that the great Powers have grabbed all the waste places of the earth, they must turn to and prove that they were worth the grabbing. We recommend the great Powers and Concessionaries under them to go to William Brothers."

Agents in London:—MESSRS. P. W. WOOLLEY & Co., 90, Lower Thames Street.

Agent in Colombo, Ceylon:—E. B. CREASY, Esq.

Agent in British Central Africa:—T. H. LLOYD, Esq., Blantyre.

Telegraphic Address: WILLIAM, HENARATGODA, CEYLON.

Liber's, A.I. and A.B.C. Codes used.

J. P. WILLIAM & BROTHERS,
Tropical Seed Merchants,
HENARATGODA, CEYLON.

Correspondence.

To the Editor.

THE PINEHURST "TEA" EXPERIMENT.

March 10.

DEAR SIR,—At it again!—but this time from the facile pen of Mr. P C Larkin of Toronto! You should naturally expect a *douceur* for the advertisements given Pinehurst. Alas!—I am almost bankrupt, having to pay 5 cts. for each clipping concerning Pinehurst, and so many are they that it keeps a paster at work transferring them to huge invoice-books. And then our generous Government, which would give me everything (except a salary), has been called on by me for this fiscal year to loan me some tea machinery and to give me some foreign tea seed. Aside from that, I have not received any assistance, and it is very questionable whether I shall ask for anything next year. "A huge joke," indeed. (Different countries do not agree on what is witty.) But Mr. Larkin's information on how "to do it" with the American Press may some day prove useful, and—with the rest of the valuable notices emanating from your office—have been duly posted under your impressive motto, *Fiat Justitia.* I have had, a few days since, a most agreeable visit from Mr. Robert Hart of India, and shall be most happy to see you here whenever you will honor me with a visit. Only do, please, not forget to have sent me all the kind notices which your columns contain concerning "Pinehurst." Never mind my feelings; I am old and tough and the laws against duelling in South Carolina are vigorously enforced.—Yours very truly,

CHARLES U. SHEPARD.

COCONUT CULTIVATION IN FIJI AND CEYLON.

Rajakadaluwa, March 23.

DEAR SIR,—To those of us who have been connected with the Coconut Industry for the last three or four decades and who have never been able to realise, even with the most modern and approved modes of culture, a higher annual average per tree than 50 to 60 nuts, Mr Tarte's letter from Fiji, dated 5th February, comes as a startling revelation illustrative of the wonderfully prolific nature of coconut trees in the isles of the South Seas. We cannot do otherwise than give full credence to his statements, but it is strange that we have never heard of this sort of thing before. Coconuts have been cultivated in Fiji these many years, but such stupendous results have never reached our ears till now. He tells us "I can assure you it is a positive fact I have often seen from 1,000 to 1,200 nuts on a tree; but this caps all." I should think so indeed. Where can we produce the like of it or half as good? If we had known before that Fiji was such a wonderful coconut country I warrant there would have been a stampede and a large exodus of capitalists from Ceylon would have testified to the attractions of the new El Dorado. Our coolies and artificers and mechanics would have fled thither pell-mell for higher wages. Enge Ramasamy?—Peejuppuku odiuan. Ko Haramanis? Peejju ratata pennalla giya. Onde Signior Jokong? Ja fugi per Fiji.

The tree referred to by Mr Tarte certainly beats the record hollow; but, I think, he is rather too sanguine about the prospective quantity of oil to be had of it.

He draws attention to the unprecedented plethora of tender nuts in three peduncles, but the mere appearance of these thousands, fresh from the embryonic stage, does not guarantee their uninterrupted progress to full maturity. I have seen as many as 30 tender fruit on a single peduncle, but, alas! their number has eventually dwindled down to 8 or 10. Some dry and drop off, affected by changes in the weather or some secret inaptitude for further development, others are nibbled by rats and squirrels and otherwise prove that "brief life is here our portion," so that no one could accurately predicate what his crop is going to be by making the newly opened spathes his data for calculation, any more than he could count his chickens before they are hatched. Miscarriages occur in every department of life, animal or vegetable, and in their best regulated families and classes—notably in the flower of the coconut tree. As Mrs Malaprop says "Man proposes and God disposes."

On the banks of the Maha oya I have counted over 250 nuts on a tree at a time, but this number was far short of what the spathes revealed on newly opening. Exceptionally favoured trees—that is to say, those benefited by the alluvial deposits of a river given to inundating its banks, or those growing on excellent loamy soil and well tended, or those highly manured and carefully looked after near dwelling houses, coolie lines, cattle sheds and horse stables—have borne wonderful bunches; but they are few and far between, and cannot come near the Phenomenal Phenomenon of Fiji. In the Keriang Kalliye District, north of Badulu oya, the finest specimens of coconut trees in this Island are to be seen flourishing, spite of hundreds of envious and evil eyes cast on them daily by footpads and passengers in coaches. They are second to none but the Maha oya coconuts; yet all these must hide their diminished heads before the awful tree which is the lawful property of Mr Tarte. With rare exceptions the ordinary number of spathes produced by a cocount tree is twelve in a year. I know of some trees in Ambepusse which gave fourteen. The nuts on those trees were from 250 to 300; but every rule has its exception and those were exceptional trees.

I have invariably noticed, and so have a good many people, that when there is a multiplicity of "Etties" or tender nuts (as they appear on the opening of the spathe) on a peduncle, the fruit is generally small. On the other hand those hanging in twos and threes are nearly always big coconuts. The Goondara or Maldivian coconuts appear in thicker clusters than the ordinary kinds; but they are exceedingly small—in fact too small to be scraped for culinary purposes with a "hirramaney." The Bhodi Poll is still smaller and more numerous in a bunch than the Goondara. I wonder how large the Fiji nuts in general and Mr. Tarte's nuts in particular, are. It would be interesting to have a specimen of a well-matured nut from Mr. Tarte's tree of trees—a photograph could not give us an idea of the size. It would also be interesting to have another letter from him, when the fulness of time shall have come, telling us how

many of those thousands now on that particular tree actually attained maturity.

Let us hope a change may not come over the spirit of his dream—if the enormous weight of the bunches in the Kurumba stage were to snap the peduncles at the base, which would, indeed, be a base proceeding after so high a promise of a ton of copra! We all know that the biggest bunches often come down with a rush in spite of props to prevent them and it is a heartbreaking sight to see a splendid cluster of 15 to 20 coconuts so suddenly brought low and scattered in every direction ere half matured. If these Fiji trees bear such extraordinary, ponderous bunches and if all the blittle fruit develop into big ones, the tree, in soot, would be in imminent danger of snapping short off, immediately below the fronds, especially when swayed to and fro violently by those terrific winds so prevalent over the Fiji isles—almost enough to bend the teeth of a carpenter's saw. We know what fine trees come down with an ordinary weight of top hamper when a blustering gale bursts through our coconut topes; what must it be over among the low-lying islands, surrounded by an infinity of sea with the storm, when it does come, howling like a thousand fiends and devastating everything high and low. I think it unwise to be dazzled by the fair pictures drawn by the over-sanguine respecting prospective fortunes in foreign lands, of fortunes too rapidly made, in black and white, but like the *ignis fatuus*, in point of fact ever nigh but never grasped.

Seeing is believing, and if the good friend who sent me the cutting anent this subject could be liberal enough to send me on a reconnoitring expedition, on the extreme quiet, as the spies were sent to the promised land, I might come back from Fiji not with a cluster of grapes, but a bunch of coconuts, a faithful report and a new lease of life. In the meantime, on the principle that a bird in the hand is worth two in the bush, I prefer to cultivate coconuts in good old Ceylon where—if I make not a splendid fortune—I need fear no magnificent bankruptcy. As Pat says: "Betther dale wid a divvle yer know than a divvle yer don't know."

If an anonymous writer had written the account of the now famous Fiji tree we might have been inclined to take it with a grain of salt, but coming as it does we are bound to receive this Tart [E] without a dollop of sugar or a wry face.—I am, dear sir, yours very truly,

EDWD. McCARTHY,

CEYLON PARA RUBBER.

London, E.C, 27th March, 1903.

DEAR SIR,—The following particulars of Ceylon-grown Para Rubber sold in Public Sale here today may interest your readers:—

Mark.	Quality.	Description.	Price ℔ lb.
Yatipanwa	5 cases	Fine thin biscuits	4s 1¼d
Do	1 do	Good scrap	3s 3¾d
Arapolakande	6 do	Fine thin pale biscuits	4s 2d
Do	1 do	Good scrap	3s 3d
Do	1 do	Fair scrappy biscuits	3s 2d
Igalkande	1 do	Fine thin biscuits	4s 1¼d
Deviturai	1 do	do	4s 0d
Do	1 bag	Scrap fair	3s 1d
Tudugulla	3 cases (not ready)		

The market is good.—We are, dear Sir, ours faithfully. LEWIS & PEAT.

A WARNING TO PLANTERS' SELLING TEA FLUFF.

April 2.

DEAR SIR,—We would like to warn planters against selling any tea fluff, sweepings or other refuse tea to native buyers unless the same have been denaturalised before leaving the estate, for we know for a certainty that suchfluff, etc. is carefully picked and the tea obtained in this way either sold in Colombo or shipped. The denaturalising is best done by mixing fluff, sweepings, red leaf, etc. with 5 per cent of slaked lime, which will render them unfit for human consumption, and will not interfere with the extraction of caffeine. We are quite willing to provide planters with the lime free of charge to mix with refuse teas and sweepings they intend sending to us, and if they insist on native buyers doing the same a good turn will be done to the tea trade. We think the matter well worth the attention of the Planters' Association and others interested in the Ceylon Tea Enterprise as the quantity of fluff and refuse teas sent to Colombo is we think, far greater than people have any idea of.

CHS. A. BOHRINGER.

DROUGHT IN AMBEGAMUWA: AND THE GREEN TEA GRANT.

Ambegamuwa, March 23.

SIR,—What an awful drought, almost everything and everybody scorched out; not sufficient water in our streams to even dilute the "auld crathur." It puts one in mind of 1887 or 1888—I am not very sure which year it was—when the drought lasted from end of November to the 14th of February. With the exception of just ·28 in. of rain we have not had a shower for over a month. Patana fires galore!

What about that green tea grant? Surely the "Thirty Committee" do not expect men to be philanthropists when most of them are face to face with ruin. The men around here are averaging 35 cts. and more for their blacks. Can you expect them to go in for green teas which average about the same and which cost nearly 4 cts. more to produce as you can *never* get the same outturn from green teas as you can from black? No, Sir, the only remedy is for the "Thirty Committee" to go on with the grant. If they have no money—stop the American campaign at once. It has done precious little good and will do no more if continued to the millennium. Keep up encouraging green teas for another 2 years and then it can look after itself. We are still in the primitive state, and every encouragement is absolutely necessary at this juncture to save a rising industry from a lamentable collapse.

G. T.

GREEN TEAS AND BLACK: COMPARISONS OF OUT-TURN.

Calcutta, April 11.

DEAR SIR,—Judging from the enclosed cutting which appeared over the signature "G.T." in the last *Observer* of 25th March, (see above) some at least of your Green Tea makers do not

seem to be quite up-to-date. At least the statement that "you can *never* get the same outturn from green teas as you can from black" does not apply to our North Indian adaptation of Mr. Drummond Deane's process, and the estimate of 4 cents or 8 pies (nearly ⅝d!) per lb. extra for manufacture is a sheer waste of money. We get our full weight from green as from black, without any loss of quality—as you may have noticed from certain appreciations of our Indian green teas published by yourself and others in Ceylon. Our new Indian appliances for the purpose are good, and naturally from long knowledge of green tea on the old Indian processes we have a bit of a pull in handling leaf; but there should be nothing beyond the resources of your local talent in reducing cost and getting full weight with a little trouble. If I could not truthfully assure Indian tea concerns that they could make green tea without loss of weight on our Indo-Ceylon system, and without any material increase in expenditure, our business-like men would laugh me out of their offices. But there is little encouragement to the introduction of our North Indian improvements till the question of security from imitators is more settled. If your correspondent's estimate is generally true in Ceylon, Indian tea concerns working on our system are going to make green tea at a cost some 3 cents below yours, and if sales at public auction in London can be relied on (and there is no sentiment, so far as I know, in London) our Indian teas will average some 3 cents more than your correspondent's estimate of value. This, of course, is purely based on your correspondent's statements which, perhaps, are not universally true. I enclose three statements from leading Indian green tea gardens, bearing out the results I claim. I am sorry I am not authorised to publish the names in support of the first two, though I append them for your information, but the third I give, and it is one that is well-known as a successful mark.—Your faithfully,

CHARLES JUDGE.

(*Extract from cutting referred to.*)

Ambegamuwa, March 25.

Sir,—What about that green tea grant? Surely the "Thirty Committee" do not expect men to be philanthropists when most of them are face to face with ruin. The men around here are averaging 35 cents and more for their blacks. Can you expect them to go in for green teas which average about the same and which cost nearly 4 cents more to produce as you can *never* get the same outturn from green teas as you can from black? No, Sir, the only remedy is for the "Thirty Committee" to go on with the grant. G. T.

(*Reports on three marks of green tea*)

Extract from a letter from the Manager of .... estate to Mr. C. Judge:—"Given adequate machinery the only extra cost would be in the fuel. At .... with short drying machinery and working night and day when busy I consider ⅛d per lb. extra on the 2,500 maunds. I made easily clear all extra expenditure on fuel and labour and also leaves sufficient over to pay the cost of machinery. *Green Tea after manufacture weighs out as well as black.*"

Extract from a letter of the Superintendent of .... to whom the above letter was submitted for confirmation or criticism. "I see no reason why .... should not get as much weight from their greens as from their blacks. If there is any loss in the manufacture of greens it is when true greens are panned occasionally and, of course, ... does not make true greens (*i.e.* the first estate makes 'uncoloured' and does not "finish.")

A third statement is from the Manager of Kolbong whose teas (after pan-firing in Calcutta by machine) fetched in open auction in London 9¼d for Young Hyson, 8½d for Hyson and 8d for Hyson 2—who says:—"Greens and blacks here weigh out the same."

GREEN TEA MANUFACTURE AND BLACK.

Ambegamuwa, April 20.

DEAR SIR,—Replying to Mr. Judge's letter and your correspondent *re* green teas and outturn (see page 783), I still maintain that it costs nearly 4c. more than black tea. Carelessness in manufacture or extreme supervision will not give an outturn of over 23 per cent. I will ask Mr Judge or your other correspondent to weigh out, say, 300 lb. of green leaf from the field straight to the steamer. They must be sure it is done under their immediate eye and if they can with a *bona fide* 300 lb. tea leaf turn out more than 68 to 69 lb. I am open to be instructed how it is done. I have carefully weighed out 200 lb. green leaf, *withered it separately*, and when ready, rolled the leaf off and had the lot fired. *24 per cent black* tea was the result. There is weighing and—weighing!—of leaf,!! and results accordingly. All true men know this. Mr. Judge is quite right to get in as much advertisement for his machine as possible. He is no exception to human nature. Apologising for any trouble,—Yours truly,

G. T.

P.S.—If 23 per cent is the result of green tea outturn, add the cost of extra leaf and extra cost of manufacture, it will turn out very close on 4c. above blacks.—G.T.

SOILS OF DOMINICA.—We have received from Mr. D. Morris, C M G, copy of a report on the physical and chemical analyses of the Soils of Dominica, 1902, by the Hon. F Watts, B. Sc., Government Analytical and Agricultural Chemist for the Leeward Islands, issued by the Commissioner of Agriculture for the West Indies. The Report contains a great deal of valuable information; for as Mr D Morris says:—

In countries where the land has been tilled for long periods, much knowledge is gained by experience and the need for thorough chemical and physical analysis may not be urgent. In Dominica the case is entirely different. Much of the land has never been cultivated and there is no fund of experience to guide intending planters. The valuable information contained in this report may well then be the means of preventing costly mistakes in planting crops on lands unsuitable to them. This report is a valuable contribution to our knowledge of West Indian soils and embodies the results of very careful work by Mr Watts, continued over a long period of time, and the thanks of the Government and the Planting Community are due to him for his active and zealous efforts.

THE BATTALGALLA ESTATE COMPANY, LIMITED.

THIRTEENTH ANNUAL REPORT, 1902.

The Directors are pleased to Report that the year's working shows a better result than in 1901. The crop has been larger, and therefore the cost of production has been much less, and although the average selling price has not reached last year's level, the profit realized is some £700 better. The quantity of tea manufactured has been 254,692 lb against last year 218,531 lb. The average selling price in London has been 8·07d gross, against 9 34d gross in 1901 ; and in Colombo 34 82 cents gross, against 37 06 cents gross ; the total crops averaged a selling price of 7·16d gross, against 7 50d gross in 1901. London sales amounted to 119,853 lb, realizing net £3,471 0s 4d, and Colombo sales 134,755 lb, realizing net R45,544·77. This compares with 63,282 lb, realizing £2,156 16s 4d, and 154,518 lb, realizing R55,638·87, sold in London and Colombo respectively. Exchange for Drafts has averaged 1/4 9-32 against 1/4 19-64 in 1901.

An interim dividend of 3 per cent. was paid in October, the Directors, now propose to pay a further 3 per cent. free of Income Tax, making 6 per cent. for the year, to also write off £512 1s. 8d. from Machinery and Factory Account, and to carry forward £96 7s. 6d. to next Account. The best thanks of the Shareholders are due to the Superintendent, Mr G C R Norman, as well as to the Colombo Agents, Messrs E Benham and Company, for valuable services rendered to the Company during the year. In accordance with the Articles of Association Mr Edward H Hancock retires from the Board and being eligible offers himself for re-election.

50 & 51 Lime Street, London, E.C, 9th March, 1903.

THE GREAT WESTERN TEA COMPANY OF CEYLON, LIMITED.

REPORT OF THE DIRECTORS.

DIRECTORS :—F W Bois, J Anderson, J C Dunbar.

At a General Meeting held on 21st July, 1902, it was decided that the financial year of the Company should in future run from January to December, and in consequence the Directors have on this occasion to submit Report and Accounts for nine months only to December, 1902. The yield of Tea was 272.147 lb netting 44·84 cents per lb. after estimating the value of 37,961 lb, which sold at a net average of 7·41 pence per lb but of which account sales have not yet been received. The Directors much regret the fall from average of 47·37 cents last season but do not attribute it to any actual falling off in the quality of the tea. The cost per lb. was 32·13 cents including 3·20 cents per lb. for manuring as against 29·05 cents for last season, and the increase may to a great extent be attributed to the shortage of crop which was 12·49 per cent less than that of the same nine months in the preceding year, and partly to the change of the Company's financial year. The amount available for distribution is R35,214·24 out of which the Directors recommend the

payment of a dividend of 6 per cent absorbing	R 35,040·00
and to carry forward the balance of ..	R 174·24
	R 35,214·24

The Estimate of Crop for the current season is 430,000 lb to cost R129,355·88 equal to 30 08 cents per lb. including 2·54 cents for manuring and with favourable weather this should be realised The acreage of the Estate is :—921 acres 2 roots 12 perches Tea ; 39 acres 0 roots 0 perches Fuel 38 acres 2 roots 4 perches Ravines; 17 acres 1 root 12 perches Grass Field; 11 acres 3 roots 13 perches Buildings and Gardens ; 30 acres 0 roots 14 perches Cart-road and roads ; 23 acres 2 roots 25 perches Railways ; Total 1,082 acres 0 roots 0 perches. During the year Mr. G F Walker left the Island, and Mr. F W Bois was appointed a Director in his place. In terms of the Articles of Association F W Bois retires by rotation and being eligible offers himself for re-election. It will be necessary to appoint an Auditor for season 1903.—By order of the Board of Directors, J M Robertson & Co., Agents & Secretaries.

THE LETHENTY TEA ESTATES ASSOCIATION, LIMITED.

The report and balance sheet to be presented at the fifth ordinary general meeting, to be held at the Registered Offices of the Company, Liverpool House, Middlesex Street, E C., at 12 o'clock noon on Tuesday, the 31st March, 1903 :—

The Directors beg to present their Report and Balance Sheet for the season ending December 31st, 1902, showing a nett profit of £4,071 16s 10d; to which has to be added balance from last year £7 4s 3d. —Total £4,079 1s 1d; which after providing for Debenture Interest £2,500, and fees to Trustees for Debenture-holders £50—Total £2,550 ; leaves a sum available for Dividend of £1,529 1s 1d. Your Directors now recommend a dividend of 3 per cent for the year on the ordinary shares, free of Income Tax, £1,364 14s ; with Income Tax payable, £95 2s 6d,—Total £1,459 16s 6d. And that the balance of £69 4s 7d be carried over to next account

ACREAGE, 1902.—Tea in full bearing, 958 acres ; tea five years old, 44 acres ; tea four years old, 30 acres ; tea under four years old, 6 acres ; forest, 85 acres ; grass land, 18 acres ; roads, ravines, and waste lands, 61 acres. Total, 1,202 acres

REPORT.

The total crop for the year 1902 amounted to 482,079 lb. of tea, being 15,261 lb. more than was obtained in the previous season. This, considering that the season was a very unfavourable one for flushing, and that the yields of most estates were below those of last season, must be looked upon as satisfactory pointing as it does to our properties being in good heart and condition.

The whole crop was sold on the Colombo market, and realised a gross average of 39·37 cents, being the equivalent of 7½d in London, a very satisfactory average in view of the low prices ruling last season, and one that reflects great credit on our estate management.

The profit for the year, including the balance of £7 4s 3d. brought forward from last account, after providing for debenture interest, income tax, and bonus to estate manager in Ceylon, shews a balance of £1,433 18s 7d.

Your Directors recommend a dividend on the ordinary shares at the rate of 3 per cent, free of income tax, carrying forward a balance of £69 4s 11d to next account.

Your Directors take this opportunity of pointing out that the result of closing the retail business has fully come up to their expectations, and net profit made this season fully justifying the action they took in January of last year.

In accordance with our Articles of Association, two of the Directors, Mr. James Skene and Mr. Sholto G D Serretire from office, and, being eligible, offer themselves for re-election.

The Auditors, Messrs. Carter, Son & White, offer themselves for re-election.

THE CEYLON TEA AND COCONUT ESTATES COMPANY, LIMITED.

DIRECTORS:—Messrs. F Capper, G H Alston, J A Henderson; Estate Inspectors. (Tea.)—Mr. R W Harrison. (Coconuts.)—Mr. W Jardine; Estate Superintendent—Mr. P T L Wetherall.

ACREAGE.

TEA.—In full bearing ..	410	2	22	Acres.
Coconuts ...	559	3	3	"
Cinnamon ...	21	2	30	"
Rubber ..	50	0	0	"
Jungle, Patua and Scrub	365	2	38	"
Total,	1,407	3	13	Acres.

The Directors have now to submit to the Shareholders the accounts for the past year. TEA DIVISION.—The crop secured amounted to 159,487 lb., being about 40,513 lb. below the estimate. Unfortunately, this estate with many estates in Ceylon has suffered from the unfavourable weather for growth. A very careful system of plucking has been followed as usual. The cost of laying down the tea in Colombo was 25·58 cents per lb. as compared with 23·31 cents per lb. in 1901, and the nett average price realised was 29·46 cents per lb. against 28·86 cents in 1901. COCONUT DIVISION.—The crop gathered was 707,034 nuts a large proportion of which was made into Copra 557. 4. 1. 14 candies, and sold at a nett average of R53·78 per candy. The coconut crop for the current year was sold as Copra at R55 00 per candy. The estimates for the current year are:—TEA, 200,000 lb. against an expenditure on working account of R52,002·00. The Directors have put in machinery for making Green Tea which has been sold on the Colombo market. Coconuts, 760,000 nuts against an expenditure of R16,420. RUBBER, is coming on well. 55 lb. have been secured and sold at an average price of R2·50 per lb. It will be noticed that the profit on last year's working is R4,377·22 and it is hoped that the present year will show even more satisfactory results. Messrs. W H Figg & F C Roles having resigned their seats on the Board, Messrs. G H Alston and F Capper were appointed to fill the vacancies. In terms of the Articles of Association, Mr G H Alston retires from the Board of Directors and is eligible for re-election. The appointment of an Auditor for the current year will rest with the meeting. By order of the Directors, TENNANT, HENDERSON & Co., Agents and Secretaries.

Colombo, 7th April, 1903.

THE TALAWAKELLE ESTATES CO., LTD.

DIRECTORS:—Messrs. Arthur Phelips Hoskyns and Charles Murray Robertson: Agents in Colombo—Messrs. George Steuart & Co.; Agents and Secretaries—Messrs. Robertson, Bois & Co.

The Directors have the pleasure to submit the Balance Sheet and Accounts of the Company for the year ending 31st December, 1902, duly audited. The mortgage has been reduced to £14,000, by the payment of the fifth instalment of £1,500 on the 31st December last, which has been charged to Profit and Loss Account. The profit on the year's working is up to the average of the preceding four years, the increased yield compensating for the slight falling off in the price obtained for the tea. The amount expended in new clearings, about £270, has been charged against revenue. In the five years since the formation of the Company, the cost of production has varied but little, the average annual yield has been 528 lb. per acre, and the average price of the tea 10·47d. During the above period, after charging all expenditure on buildings, machinery, and on the conversion of 104 acres forest land into tea, the nett profits have amounted to £37,886 2s 11d, equal to rather more than 12 per cent on the purchase price of the estates. The sum of £7,500 having been paid out of the profits towards redemption of the mortgage, the cost of the estates has been reduced to £54,646 7s 11d, the acreage now being 802 acres tea in full bearing and 104 acres young tea.

STATMENT SHEWING RESULTS OF WORKING FOR THE FIVE YEARS ENDING 31ST DEC., 1902.

Season.	Average Plucked.	Total Tea Crop.	Yield per Acre.	Sold in London.	Gross Average per lb. Tea sold in London.	Cost of Crop per lb. f. o. b. Colombo.	Average Rate of Exchange per Rupee.
	Acres.	lb.	lb.	lb.	d.	cts.	s. d.
1898	802	421,284	525	418,565	10·57	27½	1 4 3-16
1899	802	419,544	523	417,164	10·23	27	1 4 5-16
1900	802	419 632	523	417,978	11·21	27½	1 4 9-32
1901	802	422·038	526	420,599	10·23	27¼	1 4 3-16
1902	802	434,492	541	432,907	10·10	27	1 4¼

	£	s.	d.	£	s.	d.
The Profit for the year amounted to ..	7,502	0	7			
To which has to be added Interest ..	58	10	1			
And the Balance from last year of ..	432	11	6			
				7,993	2	2
Interest on the mortgage for the year has been paid amounting to ..	775	0	0			
The fifth instalment of the Mortgage of £21,500 has been paid, viz ..	1,500	0	0			
Dividend on the 6 per cent. Preference Shares for the year *less* Income Tax, has been paid ..	309	14	4			
An Interim Dividend of 5 per cent, free of Income Tax, on the Ordinary Share was paid on the 1st October ..	1,853	10	0			
Income Tax ..	447	2	6			
It is Proposed—						
To pay a Final Dividend of 7 per cent on the Ordinary Shares, free of Income Tax, making 12 per cent for the year, which will require ..	2,594	18	0			
And to carry forward the balance of ..	512	17	4			
				£7,993	2	2

The Directors desire to place on record their high appreciation of the efficient management of the estates by their Superintendent, Mr. H St. C Bowle Evans, and his staff. Mr. Charles Murray Robertson, the retiring Director, offers himself for re-election. Messrs. Whinney Smith and Whinney, who were appointed Auditors in the place of Mr. John Smith, retired, offer themselves for re-election. By order of the Board, ROBERTSON, BOIS & Co.,

Agents and Secretaries.

12, Fenchurch Street, London, E. C., 15th March, 1903.

SCHEDULE OF THE COMPANY'S ESTATES.

Estates.		Tea in bearing	Tea not in bearing.	Forest and Timber.		Grass, Land, Buildings, &c.	Approximate Total.
							Acres.
Talawakelle	(a)	302	74	7	(b)	22	405
Nannoya		250	—	1		11	262
Katookelle		250	30	—		8	288
Totals		802	104	8		41	955

(a) 3 acres leased from the Proprietor of the Boutiqnes.

(b) 2 acres leased to Messrs. Davidson and Brown.

THE VELLIKELLIE TEA COMPANY OF CEYLON, LIMITED.

DIRECTORS.—George Abercrombie Dick, Esq., Percy Lawrence Johnson. Esq. Agents and Secretaries.—Robertson, Bois & Co.

REPORT.

Your Directors beg to submit their Report and Balance Sheet for the year ending 31st December 1902, duly audited. The yield of tea fell short of the estimated quantity by 72,132 lb, the shortfall being attributed to the unfavorable weather during the latter half of the year, and other causes. The total yield was 207,818 lb tea, plucked off 540 acres, being at the rate of 385 lb tea per acre, costing free on board at Colombo 33·86 cents per lb. The gross average price of the 195,350 lb sold in London was 8·19 per lb. Last year the crop amounted to 275,549 lb, costing 26·90 cents per lb. f.o.b., and the average price for the 251,699 lb sold in London was 8·03 per lb. The crop anticipated for the current season is estimated at 250,000 lb tea, a considerable increase on the crop secured last year, which may reasonably be expected in response to the liberal cultivation carried on. The rate at which Drafts were negotiated was 1s 4 3-16d per Rupee, the same as last year.

	£ s. d.	£ s. d.
The Net Profit for the year amounts to ..	1,134 15 0	
And the Balance from last year to ..	213 9 2	
Making a total of ..		1,348 4 2
The Directors have already paid out of this, Dividends on the 6 per cent Preference Shares for the year ending 31st Dec. 1902	285 0 0	
Interim Dividend on the Ordinary Shares of 1 per cent free of Income Tax ...	352 10 0	
Income Tax ..	113 19 8	
And it is proposed :—		
To pay a Final Dividend of 1 per cent free of Income Tax on the Ordinary Shares, making 2 per cent for the year ..	352 10 0	
And to carry forward the Balance of ..	244 4 6	
		1,348 4 2

Mr Edgar Bois resigned his seat on the Board during the year. The Director retiring on this occasion is Mr George Abercrombie Dick, and, being eligible, he offers himself for re-election. The Auditor, Mr J Hamilton Alston, also offers himself for re-election. By Order of the Board, ROBERTSON, BOIS & Co., Agents and Secretaries.

London, 21st March, 1903.

THE LINDOOLA TEA COMPANY, LTD.

DIRECTORS :—Messrs. Edward Dumaresq Thomas, Walter Cross Buchanan, Charles Murray Robertson.

AGENTS AND SECRETARIES :—Messrs. Robertson, Bois & Co.

The Directors have the pleasure to submit the Balance Sheet and Accounts of the Company for the year ending 31st December, 1902, duly audited. The total crop was 180,375 lb tea, against 175000 lb estimated, and 171,311 lb obtained last season. The crop was at the rate of 563 lb per acre, and cost 23·31 cents per lb, free on board at Colombo, and the gross average price of the 168,935 lb sold in London was 7d against 8¼d last year. It will be seen that the fall off in profits is entirely attributable to the lower average obtained for the tea. Drafts were negotiated at an average rate of 1s 4¼d, the same as last year.

The Net Profit for the year amounts to ..	£1,589 9 8	
And the Balance from last year to	36 6 9	
Making a total of		£1,625 16
The Directors have already paid out of this, Dividends on the 6 per cent Preference Shares for the year ending 31st December, 1902 .. £	780 0 0	
Income Tax ..	90 1 3	
Amount written off Investment	64 6 0	
And it is Proposed :—		
To pay a Final Dividend of 2½ per cent free of Income Tax on the Ordinary Shares	650 0 0	
And to carry forward the Balance of	41 9 2	
		£1,625 16 5

The Director retiring on this occasion is Mr. Charles Murray Robertson, and, being eligible, he offers himself for re-election. The Auditor, Mr. J Hamilton Alston, also offers himself for re-election. By order of the Board, ROBERTSON, BOIS & Co., Agents and Secretaries,

London, 25th March, 1903.

THE TYSPANE TEA CO., LTD.

DIRECTORS.—Messrs. Edward Dumaresq Thomas John Philip Herringham, Walter Cross-Buchanan and Col. E D Newnham-Smith.

AGENTS AND SECRETARIES.—Messrs Robertson, Bois & Co.

The Directors have the pleasure to submit the Balance Sheet and Accounts of the Company for the year ending 31st December, 1902, duly audited. The total yield was 261,878 lb. Tea against 280,000 lb. estimated and 277,773 lb. obtained last year, and in view of the unfavourable weather during the latter part of the year, this may be considered satisfactory. The average price realised per lb. Tea was 5·59d. nett against 5·66d. nett last year. The cost of production, exclusive of expenditure on new clearing, was 26 cents per lb. free on board at Colombo, or about 4⅓d. The present season's crop is estimated at 280,000 lb. Tea. Exchanges averaged 1/4¼ por rupee against 1/4¼ last year.

The Net Profit for the year, after payment of the Interest on Debentures is ..	£1,071 1 11	
To which has to be added the balance brought forward from last year	22 9 10	
		£1,093 11 9

The Directors have already paid out of this an Interim Dividend of 1½ per cent, free of Income Tax ..	270 0 0	
Income Tax	54 5 11	
And it is proposed:—		
To pay a final Dividend of 3½ per cent free of Income Tax making 5 per cent for the year	630 0 0	
And to carry forward ...	139 5 10	
		£1,093 11 9

Mr Walter Cross-Buchanan, the retiring Director, offers himself for re-election. The Auditor, Mr J Hamilton Alston, also offers himself for re election. By Order of the Board,—ROBERTSON BOIS & Co., Agents and Secretaries.
London, March 25.

The acreage of the Estates is as follows:—

		Acres.
Tea in bearing	..	740
Tea planted in 1897	..	10
Do do 1898	..	28
Do do 1899	..	4
Do do 1901	...	18
Jungle, Timber Waste, &c.	.. ...	168
Total		968

THE PUNDULOYA TEA COMPANY OF CEYLON, LTD.

REPORT

to be presented at the Sixth Ordinary Annual General Meeting of the Company to be held at the Office of the Company, on Wednesday, the 8th April, 1903, at 12-30 p.m.

1. The Directors now submit their Report for the year ending the 31st December, 1902, together with the balance sheet and accounts of the Company made up to that date, and duly audited.

2. The crop amounted to 749,415 lb., of which the old tea contributed 734,445 lb., being the largest crop it has ever given, and the new clearings 15,000 lb. The net average price obtained was practically the same as in the previous year, but the cost of production per lb. was considerably less as shown in paragraph 4, and the Directors desire to record their appreciation of the successful efforts of the Ceylon management in this direction.

3. Since the end of 1902 the statistical position of the tea market generally has considerably improved, and the outlook for producers is more promising than for some time past.

4. The following statement gives details which may be of interest:—

Season.	Acreage Plucked.	Total Tea Crop.	Yield per Acre.	Cost of Crop per lb. f.o.b. Colombo,	Gross Average price obtained per lb. Tea.	Average rate of Exchange per Rupee.	Dividend on Ordinary Shares free of income tax.
	acres.	lb.	lb.	d.	d.	s. d.	per ct.
1902	1,800	749·445	416	4·87	8·45	1 4¼	5
1901	1,777	692·579	390	5·29	8·37	1 4 3-16	4
1900	1,640	697,359	425	4·86	8·68	1 4 17 64	6
1899	1,640	644,565	393	4·81	9·28	1 4 9-32	6
1898	1,640	627,886	383	5·29	9·27	1 4 3-16	6
1897	1,640	623·699	380	5·22	9·52	1 3⅜	6

5. The profit for the year amounted to £7,872 6d, to which has to be added interest £98 19s 8d, and the balance from last year of £318 15s—Making a total of £8,289 15s 2d.

The Directors have already paid out of this, interest for the year upon the mortgage, less Income Tax £225 5s, dividend for the year upon the 6 per cent Preference Shares, less Income Tax £1,858 6s 3d, Income Tax £430 8s 10d. And they propose to deal with the balance as follows:—To pay a dividend of 5 per cent free of Income Tax, on the Ordinary Shares, requiring £3,300, to transfer to Reserve for Depreciation and General Purposes (increasing this account to £9,000) £2,250, and to carry forward the balance of £225 15s 1d—Total £8,289 15s 2d.

6. The Director retiring on this occasion is Mr Frederick Henry Christian, who being eligible offers himself for re-election.

7. Messrs. Winney, Smith and Winney, who were appointed Auditors, in the place of Mr John Smith retired, offer themselves for re-election.—By order of the Board, ROBERTSON BOIS & Co., Agents and Secretaries.

12, Fenchurch Street, London, E.C., 28th March, 1903.

SCHEDULE OF THE COMPANY'S ESTATES, ON THE 31ST DECEMBER, 1902.

Estate.	Tea in full and partial bearing.	Tea not in bearing.	Forest and Patna Land.	Forest and Timber Plantations.	Grass Land, Buildings and Waste.	Total.
Sheen	609	77	112	45	52	895 acres
Punduloya	485	10	15	29	95	634 do
Wootton	306	8	—	39	25	378 do
Deeside	400	—	10	—	26	436 do
Total	1,800	95	137	113	198	2,343 acres

THE AUGUSTA TEA ESTATES COMPANY, LIMITED.

DIRECTORS:—Messrs. Charles A Reiss, (Chairman). Edward H Hancock, Hamilton A Hancock, Thomas J Lawrance, Henry Will (Managing Director in Ceylon). Secretary.—Albin B Tomkins.

SIXTH ANNUAL REPORT.

The Directors beg to submit their Report and Audited Accounts for the year ending the 31st December, 1902. The quantity of tea manufactured has been 134,747 lb. which has sold at an average price of 5·95d per lb. gross, the cost of production for the same, works out at 24·90 cents., or equivalent to 4⅝d per lb in London. The average rate of Exchange has been 1s 4 11-32d. The Profit on Working Account is £589 18s 5d and with the balance of £62 13s 7d from last year brought forward, the amount at credit of Profit and Loss Account is £652 12s 0d.

Debenture Interest, Preference Dividend and all fixed charges have been paid, and the Directors propose to write off £100 from Machinery Account and to carry forward £41 4s 3d to the credit of the new season.

By the Articles of Association, Mr. Hamilton A Hancock retires from the Board, and, being eligible offers himself for re-election. The Auditors, Messrs. Singleton, Fabian & Co., alo offer themselves for re-election.

Messrs. Charles A Reiss, Thomas J Lawrance, Directors. Mr. Albin B Tomkins, Secretary.
23rd March 1903.

MOUNT VERNON (CEYLON) TEA COMPANY, LIMITED.

INCORPORATED UNDER THE COMPANIES ACTS, 1862 TO 1900.

DIRECTORS.—John Alexander Melville Stephens, 13, Devonshire Terrace, Hyde Park, (Chairman). William James Chrystal, 7, West George Street, Glasgow, John George Chrystal, 8, Royal Exchange Buildings, Glasgow. Robert Francis Barclay, 19, West Regent Street, Glasgow. Alexander Cantlay, Auchnagatt, Aberdeen.

SECRETARY AND OFFICE :—James Ferrier Anderson (of Lyall, Anderson & Co.), 16, Philpot Lane, London, E.C.

REPORT OF THE BOARD OF DIRECTORS,

to be presented to the Shareholders at their First Annual Ordinary Meeting, to be held at the Office of the Company, 16, Philpot Lane, London, E.C., on Monday, 30th March, 1903, at 11 a.m.

The Directors have pleasure in submitting to the Shareholders the Report and Accounts of the Company for the year ending 31st December, 1902. The Company was incorporated on 27th December, 1901, and the transfer of the property duly completed on 10th January, 1902, from which latter date the Estate has been worked for account of the Company. As indicated in the private prospectus issued in December, 1901, The Vendors have made over to the Company the whole net profits earned by the Estate from 1st January, 1901, to date of purchase 10th January, 1902. These amounted to £4,702 17s, and were utilised in the payment of dividends of 11¾ per cent. in all, absorbing £4,700, leaving a small balance of £2 17s to carry forward. The net profits from 10th January to 31st December, 1902, amount to £3,597 4s 6d, which, with the £2 17s mentioned above, gives a total to be dealt with of £3,600 1s 6d. An Interim Dividend of 4 per cent, free of Income Tax, paid in September, 1902, absorbed £1,600. It is now proposed to pay a final dividend at the same rate (making 8 per cent. for the year) £1,600. To place to Reserve Account as a nucleus of that Fund £200. And to carry forward to next Account £200 1s 6d.—£3,600 1s 6d. The Directors regret that the profits for the past year have fallen considerably short of those realised by the Estate in previous seasons, the reasons for such shrinkage being threefold, namely, exceptionally unfavourable weather in Ceylon, the depressed state of the Tea market, and the loss of profit on the purchase of Belton Leaf—the proprietors of that estate having built a Factory of their own in the early part of the year. The crop secured for the past season was 352,319 lb, or about 466 lb per cultivated acre, and in addition to this, 4959 lb tea was made from Belton leaf in the beginning of the year, giving a total output from the factory of 357,278 lb tea. It will be seen from the accounts that the tea has been sold partly in London and partly in Ceylon, the system adopted being to sell the higher grades in the former and the lower grades in the latter market, and the market continues to maintain a prominent position both in London and Colombo. The management of the estate has changed hands during the year, Mr Cantlay having resigned, and Mr Joseph C Dunbar having been appointed Manager in his place. It is a matter for satisfaction that, as a member of the Board, the Company will continue to have the benefit of Mr Cantlay's long experience and intimate knowledge of the estate, while the Shareholders are also to be congratulated on securing the services of an experienced planter like Mr Dunbar as the Company's Manager and Representative in Ceylon. In accordance with the Articles of Association, Messrs J A Melville Stephens and W J Chrystal retire from the Board, and these gentlemen being eligible offer themselves for re-election. Messrs Cape and Dalgleish, C.A., also offer themselves for re-election as Auditors.—By Order of of the Board, JAS. F. ANDERSON, Secretary.

THE YATIYANTOTA, CEYLON TEA COMPANY, LIMITED.

DIRECTORS :—Messrs A Thomson, Chairman, Charles Young, J M Skinner.

MANAGING AGENTS:—Messrs Whittall & Co., Colombo.

SECRETARY AND OFFICERS :—T A Williams, 27, Mincing Lane, London, E.C.

REPORT OF THE DIRECTORS

to be submitted at the sixth annual general meeting of Shareholders to be held at the London Commercial Sale Rooms, 30 to 34, Mincing Lane, London, E.C., on Wednesday, the 8th April, 1903, at 12 noon.

The Directors now beg to submit the duly audited accounts of the Company for the year ended 31st December, 1902. The bearing area, of all ages, was 2,982 acres, from which crops amounting to 1,434,496 lb were secured, and, in addition, 7,107 lb were made from purchased leaf. Of the total, 772,011 lb were sold in Colombo, and 669,592 lb were shipped to London, the net average realised for the whole being 4·84d per lb. Including purchased leaf, the average cost, f. o. b. (or delivered to buyers in Colombo) was 3·37d per lb. Tho average rate of exchange for the year was 1s 4 3-16d per rupee.

The following is a comparative statement of the past three years' working :—

Year.	Acreage plucked Mature and in partial bearing	Crop secured from Company's Estates.	Average yield per acre Plucked.	Average Rate of Exchange per Rupee.	Cost of Crop per lb.	Net Average Sale Price per lb.
1900	2,854	1,470,590 lb	515lb	1s 4 7-32d	3·40d	4·56d
1901	2,970	1,261,484 ,,	425 ,,	1s 4 7-32d	3·83d	5·10d
1902	2,982	1,434,496 ,,	481 ,,	1s 4 3-16d	3·37d	4·84d

The outturn for 1902 fell below expectations, owing to unfavourable weather during nearly the whole of the second half of the year. The market was very poor during the earlier months of the year, but since October it has undergone material improvement.

The net profit for the year amounts to				£8,157	3	1
To which has to be added balance from 1901 Account				2,072	5	5
Together				10,229	8	6
Dividends have been paid as follows :— On the Preference Shares at 6 per cent per annum— On 1st July, 1902, and 1st Jan. 1903 ..				2,700	0	0
Leaving now to be dealt with ...				£7,529	8	6
This the Directors propose to appropriate as follows:—						
(1) In payment of a Dividend on the Ordinary Shares of 5 per cent for the year 1902 ..	£4,500	0	0			
(2) In writing off Cost of Properties, including Depreciation of Machinery and Buildings ..	1,(0)	0	0			
(3) In carrying forward to 1903, the balance of	2,029	8	6			
				£7,529	8	6

The following are details of the acreage of the different properties as on 1st January, 1903 :—

Estate.	Acreage under Tea. Bearing	Partial Bearing	Not Bearing	Total.	Forest Reserves &c.	Total Acreage.
Polatagama ...	791	..	50	841	201	1,042
Weoya and New Polatagama ...	632	95	...	727	345	1,072
Walpola ...	871	...	...	871	145	1,016
Rondura ..	581	20	..	601	629	1,230
	2,875	115	50	3,040	1,320	4,360

The condition of the Company's Estate continues satisfactory, and the Directors desire to record their high appreciation of the management and general working of the properties. In terms of the Articles of Association, Mr. C Young retires from the Board, and being eligible, offers himself for re-election. Messrs. Cape & Dalgleish, C.A., offer themselves for re-election as Auditors of the Company. By order of the Board. T. A. WILLIAMS, Secretary.

27, Mincing Lane, London, E.C., March 30th 1903.

BALMORAL (CEYLON ESTATES) COMPANY, LIMITED.

REPORT.—To be presented at the Fifth Annual General Meeting of the Balmoral (Ceylon) Estates Company, Limited, to be held at the Offices of the Company, 12, Fenchurch Street, E.C., on Thursday, 9th April, at 11-30 a.m.

The Directors have the pleasure to submit the Balance Sheet and Accounts of the Company for the year ending 31st December, 1902, duly audited.

The total yield of tea was 540,057 lb., against 595,197 lb. last year, being at the rate of 581 lb. per acre all round; the cost of production, exclusive of Capital Expenditure, was 26 cents per lb., free on board at Colombo, and the gross average price obtained was 9·22d. per lb. against 8·53d. per lb. last year—Sandringham Teas averaging 8·84d. and Clydesdale 9·61d. per lb. Exchange has averaged throughout the year 1s. 4 7-32d. against 1s. 4 3-16d. last year.

All Capital Expenditure has been charged against Revenue, and in view of this the Directors do not consider it necessary to set aside a specific sum for depreciation.

The Net Profit for the year amounts to £7,451 18s. 4d.; and the balance from last year to £675 10s. 6d., making a total of £8,127 8s, 10.

The Directors have already paid out of this, Dividends on the 6 per cent Preference Shares for the year ending 31st December, 1902, £1,800.; Interim Dividend on the ordinary Shares of 5 per cent free of Income Tax £2,601 15s.; Income Tax £357 11s 7d.; and it is proposed to pay a Dividend of 5 per cent free of Income Tax on the Ordinary Shares, making 10 per cent for the year £2601 15s,; and to carry forward the balance of £766, 7s. 3d.—Total £8,127 8s, 10d.

The Auditor, Mr. J. Hamilton Alston, offers himself for re-election. By order of the Board, C. G. Bois, Joint Secretary.

London, 31st March, 1903.

SCHEDULE OF THE COMPANY'S ESTATES, TEA.

	Full Bearing.	Partial Bearing.	Not in Bearing.	Grass, Patna, &c.	Total.
Sandringham and Yarravale	527	33	26	160	626
Balmoral and Clydesdale	402	—	4	12	543
Acres.	929	37	31	172	1,169

THE CRAIGHEAD TEACOMPANY.

REPORT.

The Directors have the pleasure to submit the balance sheet and accounts of the Company for the year ending 31st December, 1902, duly audited.

The mortgage was reduced to £2,700 by the payment of the third instalment of £450 on the 31st December last. This sum is debited to profit and loss account, and is an ample charge for depreciation.

The total yield, excluding some 20,000 lb made from purchased leaf, was 428,091 lb tea which cost 25½ cents F O B Colombo, and the gross average price obtained in London was 6·66d per lb. The crop of the previous year was 481,265 lb tea, and the gross average was 6·67d. per lb.

The net profit for the year amounted to £2,580 18s. And the balance from the previous year to £670 11s 1d. Total £3,521 9s 1d.

Interest on the mortgage has been paid £157 10s, The fourth instalment of the mortgage (£4,500) has been paid £450. Dividend on the six per cent. preference shares for the year has been paid £481 16s. An interim dividend of 2½ per cent. on the ordinary shares, free of income tax has been paid £572 15s. Income tax £104 9s 2d. It is proposed—To pay a final dividend of 3½ per cent free of income tax, on the ordinary shares, which will require £801 17s. And to carry forward the balance of £683 1s 11d. Total £3,251 9s 1d.

The Directors desire to place on record their appreciation of the efficient management of the estates by Mr. Ernest Hamilton and his staff.

Mr. George Alston, the Director who retires on this occasion, being eligible, offers himself for re-election.

The approximate acreages are as follows as per recent survey:—

Tea.—In bearing	..	834 acres.
„ In partial bearing	..	53 „
„ Not in bearing	..	9 „
Ravines and Waste	..	62 „
Timber Clearings	..	53 „
Jungle and Patana	..	31 „
		1,042 acres.

CEYLON PLANTERS' RUBBER SYNDICATE.

Authorised Capital R250,000. Called up Capita R140,000.

DIRECTORS:—W P Halliley, A H Dunsmure, E Hamilton. Secretary:—J E B Baillie Hamilton.

ACREAGE.

The Acreage of the Syndicate property is as follows:—

Opened Land	..	644 Acres
Reserve	..	240 „
Toral	..	884 Acres

At 31st December, 1902, 644 acres were cleared which:—

350 Acres were in Rubber under 2 years.
85 „ „ „ 1 „
9 „ „ Coconuts
200 „ „ cleared and 60 planted with Coffee.

Mr. L T Boustead visited the Syndicates Estate on 11 and 12th March and reports that all the older fields show a good even growth fully up to the average of other Estates and a fair percentage of trees have started to branch out and stems to thicken.

The 60 acres of Coffee planted looks very well, about 4 per cent of vacancies only, and the Superintendent is confident of finishing the remaining 140 acres by the end of April.

A new Director and Auditor will have to be appointed in place of Mr. A H Dunsmure and Mr. W H Graham.

Expenditure to date :—		126,132. 91 Ceylon Expenses 4,729. 17
Estimate of Ex. for	1903	15,800.
"	1904	14,246.
	1905	16,357.
		172,535. 91

NEW RUBBER COMPANIES.

BOLIVIAN RUBBER AND GENERAL ENTERPRISE, LTD. (76,699).—Registered March 16, with capital £150,000, in £1 shares, to adopt an agreement with C Chavanne, S Chavanne and H Ferreccio, to acquire rubber concessions and rights, to exploit rubber properties in Bolivia or elsewhere, to enter into any arrangement with any supreme municipal or local authorities, or others with reference to any charters or privileges or otherwise, to prospect, examine, and explore any countries and places, to employ and equip expeditions, commissions, experts and agents, to work, develop, carry out, exercise, develop and turn to account any properties, rights and privileges acquired by the company, to search for, win, get and prepare for market auriferous sand, quartz and ore and other mineral substances, to carry on business as sawyers, carriers, farmers, general merchants and financiers, etc. The subscribers are :

	Shares.
H Ferreccio, Fucuman, Argentine Republic, gent ..	1
P Burelier, Tzieurs (Loire), France, gent ..	1
E Copping, 18, St. Swithin's Lane, E C, secy ..	1
A E Lidbury, 75, Granville Rd, Walthamstow, clk...	1
W S Lart, Worcester, House, E C, clk ...	1
C A Knight, 6, Upper Av, Rd, Hampstead N W, engr ...	1
E Bird, St. Swithin's Lane, E C, housekeeper ..	1

Minimum cash subscription 10 per cent. of the shares offered to the public. The first directors (not to be less than 3 nor more than 7) are C A Knight, I Chavanne, P Burelier and H Ferreccio; qualification 500 shares ; remuneration £100 each per annum and 5 per cent. of the dividend in excess of 10 per cent. dividend. Registered office, 18, St. Swithin's Lane, E.C.

PATALING RUBBER ESTATES SYND, LTD. (76,766).—Registered March 20, with capital £30,000, in £1 shares, to adopt an agreement with Miss M Bennett and H W Brett, for the acquisition of the Pataling Estate, containing about 2,000 acres on Klang River, 5 miles from Kwala Lumpor, Federated Malay estates, held from the Government by the said Miss F M Bennett under a Selangor Land Grant for 999 years from 1895, to grow and cultivate rubber, coconuts, coffee and other produce. and to carry on the business of planters, etc. The subscribers are :

	Shares.
H W Brett, Halliford-on-Thames, gent ...	250
T Ritchie, J P, Cromer ...	250
F W Chaine, Heathercroft, Totland Bay, late Lieut R N ..	250
J L Anstruther, Wellington Court, Albert Gate, S W, Ceylon estate proprietor ..	250
W S Bennett, The Point, Bath Road, Reading, gent	250
N N Blomefield, 45, Bloomsbury Sq, W C, solr ...	1
A T White, 74, Tremadoc Road, Clapham, S W, clk	1

Minimum cash subscription £7,000. The number of directors is not to be less than 3 nor more than 5 ; the first are J L Anstruther, W S Bennett, H W Brett, F W Chaine and T Ritchie, J P ; qualification £250 ; remuneration £50 each per annum Registered by Warren, Murton and Miller, 45, Bloomsbury Square, W.C.

SOUTH AMERICAN INDIA-RUBBER CO, LTD. (76,755).—Registered March 19, with capital £500, in £1 shares, to acquire, prepare, import, sell and deal in india rubber, caoutchouc, gum, elastic, gutta percha or other gums in their crude state, and to manufacture and deal in any articles of things made of the said substances. No initial public issue. The number of directors is not to be more than 5 ; the subscribers are to appoint the first. Registered by Paines, Blyth and Huxtable, 14, St. Helen's Place, E. C.—*Investors' Guardian*, March 28.

INDIAN *VS.* CEYLON GREENS.

RELATIVE COST OF MANUFACTURE AND LONDON PRICES.

A merchant with considerable experience and knowledge of the Ceylon Green Tea trade writes in regard to Mr. Judge's letter published on page 775, as follows :—

With regard to Mr. Charles Judge's letter to you, it will be noted from the weekly sales of greens held in Colombo that the average rates obtained for the teas of various gardens average from 33 cents to 39 cents per lb., depending upon the quality and elevation of the estate. "G.T."'s statement in a letter addressed to the newspapers dated 25th March (which stated that the greens cost 4 cents more to manufacture than blacks) cannot be endorsed by any but careless manufacturers in Ceylon. As stated by one of Mr. Judge's Indian correspondents, the cost of firewood is necessarily slightly in excess of the cost of firewood for black teas, as there is a larger percentage of moisture to expel from the Green Tea. Many estates, however, turn out quite as large a percentage of green as of black tea ; so that India has no advantage over Ceylon in this respect. Where firewood is scarce and dear, the extra cost for fuel is a serious item. As regards Indian Green tea fetching higher prices than those of Ceylon manufacture in London, a glance at Messrs. Gow Wilson and Stanton's Circulars for February and March, to take a convenient period, will show how prices rule. On February 6th no green tea averages were given. On February 13th a break of Ceylon Young Hyson fetched an average of 8¼, while the average obtained for a break of 58 packages including Young Hyson, Hyson No. 1, Hyson No. 2, Fannings and Dust got an average of 6¾. In the February 27th circular a break of Indian Greens, including only Hyson and Hyson No. 1, got an average of 7½, while a break of Ceylon Tea including all grades—Young Hyson, Hyson No. 1, Hyson No. 2, and Fannings and Dust also got an average of 7½ notwithstanding that it included two more grades than the Indian break. In the March 6th circular a Ceylon break including four grades is recorded as having obtained a 6½d average, while an Indian consignment only gets 5¾d, while the break only included two grades. In March 13th's circular a break of Indian Green Tea gets an average of 6d for three grades, while in the March 27th circular a break of Ceylon including two grades got an average of 5¼d.

If these prices can be taken as a criterion, Indian Green tea is certainly not getting higher prices than Ceylons.

PLANTING NOTES.

EGGS.—Remember that the hen that is laying needs about twice as much feed as she would need if not laying. Like many other machines, she must be furnished the material from which to manufacture her finished product.—*Agricultural Gazette of New South Wales*, March.

MONTHLY TEA AVERAGES IN LONDON.—The table we publish elsewhere from Messrs. Geo. White & Co.'s annual tea report is always looked forward to with high interest. For 1902 Udapussellawa and kindred districts are first with 8⅜d average—⅛th below last year, and still ⅝ths below 1900. Maskeliya similarly shows a drop of ¼d; but Lower Dikoya, Kellebokka, Matale and Kelani Valley a rise of ⅛th. Others are stationary *e.g.* Hantane, Kurunegala, Rakwana and Kalutara, while falls are seen again in Pussellawa (¼), Udugama (¼), Haputale and Madulsima (⅛), and in the general average, 6⅞ as against 7d—and 7⅜ in 1900. Kurunegala, &c, 5½d, is the lowest average recorded for 1902.

COLLAR-PRUNING FOR CEYLON TEA.—An Indian planting correspondent, Mr. A Cooke, who asked in our columns the other day whether collar-pruning had ever been done twice on Ceylon bushes, has a fairly complete answer in the most useful remarks given elsewhere by a local planter, signing "Still uncollared." The treatment is a drastic one and—like most drastic treatment everywhere—is in Ceylon only applied to the worst cases, teas of bad *jât*. At the same time there may be collar-pruning *and* collar-pruning!—if Mr. Cooke has confused the two operations of "coppicing" and "stumping" which are carefully distinguished elsewhere. The poorer the *jât*, the more attention the bush requires, to be kept in passable condition; and whether collar-pruning, or other means, will do this, is left to the practical planter to find out.

CAFFEINE COFFEE.—It has long been known that coffee berries usually contain something like one per cent of caffeine, the substance to which coffee owes its stimulating properties. Recently M Bertrand of the Pasteur Institute has analysed nine kinds of coffee with interesting results which are referred to in the *Agricultural News* Barbados. The beans of one species (*Coffea Humblotiana*) contained no caffeine, and in another species (*C. mauritiana*) only 0·07 per cent. was present. These two varieties are thus for all practical purposes free from the simulating alkaloid. In Arabian coffee (*C. arabica*), obtained from various sources, the caffeine present varied from 0·83 to 1·60 per cent. Liberian coffee (*C. liberica*) yielded between 1·06 and 1·45 per cent. The new African coffee (*C. stenophylla*) appears very rich in caffeine, 1·52 and 1·70 per cent.being the results of two analyses recorded. *Coffea Canephora* gave the highest caffeine content, 1 97 per cent. The paper is printed in *L'Agriculture pratique des pays chauds*, Year II., pp. 211-13.—*Journal of the Society of Arts*, March 27.

GREEN TEA IN AMERICA.—The *American Grocer*, March 18th, states:—"Messrs. Wisner & Co. received advices from Shanghai stating that no further supplies of green teas can be obtained from the country, as the whole of this season's crop has been marketed. The point is of particular interest when the large size of this season's production of green teas is taken into consideration." This will continue until about the first week of June when the first of the new seasons shipments should begin to arrive from China. Japan, we note in an Eastern paper, has again commenced to make black tea to suit the Russian taste.

POISONS AND PESTS.—Quite recently we have seen a preparation intended for the destruction of ants. This preparation, as we have been informed, contains arsenic in very large quantity, namely, not less than 24 grains to the ounce, two grains being a fatal dose. A pint bottle would thus contain sufficient arsenic to poison one hundred and fifty or more adults. The actual cost of the "mixture" is estimated at about threepence half-penny. What the selling price is we do not know, but in all probability it is one which admits of a very large profit. It is true that to the sample we saw a label with the word "poison" was affixed but the bottle was an ordinary medicine bottle with nothing distinctive about it to prevent carelessness or accident.—*Gardeners' Chronicle*, April 4.

THE PINEHURST TEA EXPERIMENT.—The only fault we have to find with Mr. Shepherd's letter on the tea experiment of which he is in charge is that it does not convey sufficient fresh information to dispel the cloud he seems to feel has been caused by Mr. Larkin's uncomplimentary remarks. We are glad to hear that it is so far progressing that he has asked Government for tea machinery, indicating increased manufacture, and, even if it be of academic interest only, all tea planters will be glad to hear how the Pinehurst experiment is getting on from time to time. Of course it is within the bounds of possibility that this pleasure will be tempered, with those whose interests are against any development of fresh tea-producing countries; but for this we have still a little while to wait.—?

THE MANUFACTURE OF GREEN TEA AND BLACK—"G. T." who has evidently demonstrated the matter to his own personal satisfaction firmly adheres to his former contention. We referred his letter to our correspondent who wrote on Saturday and he suggests "that it would be interesting if "G. T." were to give particulars of his process, so that some more knowing one may give him the tip how to save loss in weight. It is a pity that he should go on losing 4 per cent weight when Mr. Judge and perhaps a few Ceylon planters also, can give such advice as will save this loss. Unless he expresses 4 per cent solid matter from his leaf, when squeeezing out the surplus water, how can there be loss in weight? If he sends this stuff out of his factory drains to manure his fields he may of course get a corresponding return from his bushes at a later period, which may satisfy him." Some other green tea manufactures in Ceylon might also give us the benefit of their experience on this question,

Monthly Shipments of Ceylon Black Tea to all Ports in 1902-1903.*

(Compiled from Chamber of Commerce Circular.)

	United Kingdom.		Russia.		Continent of Europe.		Australia.	
	1902. lb.	1903. lb.	1902. lb.	1903. lb.	1902. lb.	1903. lb.	1902. lb.	1903. lb.
January ..	9056013	7720436	612958	323101	151984	127883	714247	1738760
February	7455219	7983166	919709	372474	121158	150846	1020948	1337353
March ...	8198179	7192958	896513	568942	91081	138065	1713916	737977
April ...	8521388		988698		93198		2081904	
May ..	9638555		238239		80669		2000522	
June ...	12563050		1984976		166479		1828695	
July ..	10724781		1779011		108785		1747960	
August ...	7396614		1065599		208894		1574498	
September	6652202		795315		70262		1857897	
October ..	6559765		360844		79943		1567796	
November	6386229		937757		213619		1033030	
December	9072552		285785		60628		1577381	
Total ..	102,899,489		11,599,953		1,206,140		18,718,794	

			America.		All Other Ports.		Total.	
			1902. lb.	1903. lb.	1902. lb.	1903. lb.	1902. lb.	1903. lb.
January	..	..	125795	538166	389215	584321	11050212	11032667
February	..	..	115332	743733	385705	615790	10018071	11203362
March	...	..	566263	417750	311191	270198	11777143	10625890
April	..	..	807390		290137		12782715	
May	..	..	242651		436410		12637046	
June	..	..	403005		714471		17660676	
July	..	...	464858		846036		15671431	
August	...	...	461229		678095		11384929	
September	...	...	563981		688730		10628487	
October	...	...	483085		655827		9707260	
November	...	...	282794		547508		9400936	
December	...	...	558864		626319		12181529	
	Total ...		5,048 137		6,569,644		146194397	

Monthly Shipments of Ceylon Green Tea to all Ports in 1901—1902.

	United Kingdom.		Russia.		Continent of Europe.		Australia.	
	1902. lb.	1903. lb.	1902. lb.	1903. lb.	1902. lb.	1903. lb.	1902 lb.	1903. lb.
January ...	64021	95535	..	...	...	3000	...	...
February	24839	52407	4420	...	...	1430	...	..
March ..	14800	59458	24210	...	...	...	..	...
April ...	13676	...	8000	...	...	...	...	...
May ..	70103	...	..	...	...	...	..	...
June ...	87340	...	74225	...	...	...	...	..
July ...	40574	...	..	...	...	...	...	...
August ...	70900	...	..	...	...	...	...	..
September	50771	...	..	...	...	...	...	...
October ...	68679	...	..	..	...	...	..	..
November	48076	...	..	...	...	...	..	...
December	40423	...	..	...	...	...	..	...
Total ...	644,443		127,115				...	

		America.		All Other Ports.		Total.	
		1902 lb.	1903. lb.	1902. lb.	1903. lb.	1902. b.	1903. lb.
January	...	113332	26534	...	..	177353	363883
February	..	26480	567474	515		56254	621616
March	...	62313	551016	100	...	101423	610474
April	...	53610	...	9165	...	84451	...
May	..	32676	...	3280	...	106059	...
June	...	84184	...	4500	...	250249	...
July	...	194016	...	...	...	234590	...
August	...	105982	...	1600	...	178482	...
September	...	333704	...	6800	...	391275	...
October	...	281168	...	..	...	349847	...
November	...	156653	...	20080	...	224809	..
December	...	365843	...	2240	...	408506	...
Total	...	1,968,456		48,280		2,796,844	

* It is impossible to get the figures for the last month in time for publication; but see pages 785, 786 for certain information.

SHARE LIST.

ISSUED BY THE

COLOMBO SHARE BROKERS' ASSOCIATION.

CEYLON PRODUCE COMPANIES.

Company	paid p. sh.	Buyers.	Sellers.	Transactions
Agra Ouvah Estates Co., Ltd.	500	920	...	..
Ceylon Tea and Coconut Estates	500	..	...	—
Castlereagh Tea Co., Ltd.	100	100	102½	100
Ceylon Provincial Estates Co. Ltd.	500	550	...	—
Claremont Estates Co., Ltd.	100	..	...	...
Clunes Tea Co., Ltd.	100	...	80	..
Clyde Estates Co., Ltd.	100	..	50	...
Doomoo Tea Co., of Ceylon Ltd.	100	85	...	90
Drayton Estate Co., Ltd.	100	...	...	...
Eila Tea Co., of Ceylon, Ltd.	100	...	45	...
Estates Co of Uva, Ltd.	500	..	300	..
Gangawatte Tea Co., Ltd.	100	100	..	..
Glasgow Estate Co., Ltd.	500	1200	...	..
Great Western Tea Co., Ltd.	500	...	750	..
Hapugahalande Tea Estate Co.	200	...	...	...
High Forests Estates Co., Ltd	500	515	...	515
Do part paid	400	...	400	...
Horrekelley Estates Co Ltd	100	..	100	100
Kalutara Co., Ltd.,	500	..	325	—
Kandyan Hills Co., Ltd	100	..	..	...
Kanapediwatte Ltd.	100	75	...	75
Kelani Tea Garden Co., Ltd.	100	...	35	—
Kirklees Estate Co., Ltd.	100	..	..	...
Knavesmire Estates Co., Ltd.	100	—	62½	—
Maha Uva Estates Co., Ltd.	500	—	...	—
Mocha Tea Co., of Ceylon, Ltd..	500	780	—	800
Nahavilla Estate Co., Ltd.	500	...	400	...
Neboda Tea Co., Ltd.	500	—	..	—
Palmerston Tea Co., Ltd.	500	—	—	—
Penrhos Estates Co, Ltd.	100	85	92½	..
Pitakanda Tea Company	500	—	—	...
Pine Hill Estate Co., Ltd.	60	—	47½	..
Putupaula Tea Co. Ltd.	100	—	..	—
Ratwatte Cocoa Co., Ltd	500	200	—	—
Rayigam Tea Co., Ltd.	100	...	62½	—
Roeberry Tea Co., Ltd.	100	100	105	—
Ruanwella Tea Co., Ltd	100	60	62½	60
St. Heliers Tea Co., Ltd,	500	..	500	..
Talgaswela Tea Co., Ltd.	100	...	35	..
Do 7 per cent Prefs.	100	—	80	—
Tonacombe Estate Co., Ltd,	500	—	..	—
Union Estate Co., Ltd.	500	..	...	—
Upper Maskeliya Estates Co., Ltd.	500	615	625	..
Uvakellie Tea Co. of Ceylon, Ltd	100	80	85	...
Vogan Tea Co., Ltd.,	100	...	60	..
Wanarajah Tea Co., Ltd.	500	950	—	com.
Yataderiya Tea Co., Ltd.	100	—	365	362½

CEYLON COMMERCIAL COMPANIES

Company	paid p. sh.	Buyers.	Sellers.	Transactions
Adam's Peak Hotel Co., Ltd.	100	...	30	—
Bristol Hotel Co., Ltd.	100	—	..	..
Do 7 per cent Debts	100	..	—	..
Ceylon Gen. Steam Navigation Co., Ltd	100	210	225	—
Ceylon Ice & Cold Storage Co. Ltd.	100	..	100	—
Ceylon Superaëration Ltd.	100	—	..	--
Colombo Apothecaries' Co. Ltd.	100	—	140xd	145 c d
Colombo Assembly Rooms Co., Ltd.	20	15	.	...
Do prefs.	20	...	..	—
Colombo Fort Land and Building Co., Ltd.	100	90	...	95
Colombo Hotels Company	100	285	290	290
Galle Faco Hotel Co., Ltd.	100	...	200	195
Kandy Hotels Co., Ltd.	100	132½	...	132½
Mount Lavinia Hotel Co., Ltd.	500	—	300	..
New Colombo Ice Co., Ltd.	100	100	...	100
Nuwara Eliya Hotels Co., Ltd.	30	—	27½	..
Do 7 per cent prefs.	100	—	—	—
Public Hall Co., Ltd.	20	...	—	...

LONDON COMPANIES

Company	paid. p. sh.	Buyers.	Sellers.	Transactions.
Alliance Tea Co., of Ceylon, Ltd.	10	8	9	—
Anglo-Ceylon General Estates Co	100	—	52–57	
Associated Estates Co., of Ceylon	10	...	nom	—
Do. 6 per cent prefs	10	—	2–4	—
Ceylon Proprietary Co.	1	—	5–10	—
Ceylon Tea Plantation Co., Ltd.	10	—	24–25	—
Dimbula Valley Co. Ltd	5	—	5½–6	—
Do prefs	5	—	5½–6	—
Eastern Produce & Estate Co. Ltd,	5	—	3¾–4¼	—
Ederapolla Tea Co., Ltd	10	—	5–8	—
Imperial Tea Estates Co., Ltd.	10	5	6 6	—
Kelani Valley Tea Asscn., Ltd.	5	—	3–5	—
Kintyre Estates Co., Ltd.	10	..	4–5	—
Lanka Plantations Co., Ltd	10	—	3–4	—
Nahalma Estates Co., Ltd.	1	—	nom	—
New Dimbula Co., Ltd.	1	—	2¾–3	—
Nuwara Eliya Tea Estate Co., Ltd	10	—	10½	..
Ouvah Coffee Co., Ltd.	10	..	8–9	...
Ragalla Tea Estates Co., Ltd.	10	..	9–11	...
Scottish Ceylon Tea Co., Ltd.	10	..	10–12	..
Spring Valley Tea Co., Ltd.	10	..	2–5	—
Standard Tea Co., Ltd.	6	...	—	£12
The Shell Transport and Trading Company, Ltd.	1	..	2⅞–3⅛	..
Ukuwella Estates Co., Ltd.	25	..	par	6½
Yatiyantota Ceylon Tea Co., Ltd.	10	..	6..7	9½
Do. pref. 6 o/o	10	..	9..10	—

BY ORDER OF THE COMMITTEE.

Colombo, May 1st, 1903.

' Latest London Prices

RAINFALL RETURN FOR COLOMBO.

(Supplied by the Surveyor-General)

	1898.	1899	1900	1901	1902	Av. of 33yrs.	1903.
	Inch	Inch.	Inch.	Inch.	Inch	Inch.	Inch.
January ..	2·32	·98	3·72	11·91	1·95	3·45	4·16
February ..	1·98	2·78	0·63	3·55	4·57	2·02	3·95
March ..	4·21	0·88	3·71	5·12	6·85	4·82	2·53
April ..	22·81	6·66	15·12	8·71	10·01	11·30	7·60*
May ..	5·80	17·73	10·63	6·28	11·89	11 86	
June ..	10·94	9·23	7·83	5·93	9·84	8·32	
July ..	6·15	1·11	6·77	4·52	4·63	4·46	
August ..	0·97	0·62	7·35	0·46	2·78	3·66	
September ..	6·90	1·48	4·00	3·93	8·18	5·04	
October ...	20·60	12·99	9·47	3·91	31·47	14·56	
November ..	17·38	8·58	9·25	19·84	20·10	13·00	
December ..	3·05	4·44	5·20	1·70	6·43	6·21	
Total..	103·11	73·48	83·68	75·86	118·70	88·71	18·24

From 1st to 30th April 7·60 in., that is up to 9-30 a.m. on the 3 th A ril.—ED. C.O

CEYLON TEA: MONTHLY SHIPMENTS TO UNITED KINGDOM AND ESTIMATE.

Estimate for April 1903—8½ to 8¾ mill. lb.
Total Shipments do 1903— 8,250,000 lb.
Do do do 1902— 8,521,388 lb.
Do do do 1901— 8,474,940 lb.
[ESTIMATE for May 1903—8½ to 9 million lb.]

A NEW FODDER PLANT: "PENICILLARIA."—This new fodder plant seems to be attracting universal attention among our readers, says *American Gardening*, and the crop is truly wonderful, as it yields from three to seven cuttings per year from one sowing and has produced ninety-five tons of green fodder per acre from three cuttings in a carefully weighed test. The seeds are so very small that one pound will plant an acre, and still one plant usually has 25 to 75 stalks, growing seven to fourteen feet in height. When it is figured that one-fourth acre will produce sufficient fodder to support a cow six months, either for summer or winter food, and that the dry hay, as well as the fresh fodder, is highly nourishing, the value of the new plant will be better appreciated.—*Indian Planting and Gardening*, April 11,

COLOMBO PRICE CURRENT.

(Furnished by the Chamber of Commerce.)

EXPORTS

Colombo, April. 27th, 1903.

CARDAMOMS :—
All round parcel, well bleached per lb. R1·10
Do. dull medium do. R0·90
Special assortment, 0 and 1 only do R1·30
Seeds do. R0·80

CINCHONA BARK :—
Per unit of Sulphate of Quinine 7c—1½ to 3 per cent.

CINNAMON :—(in bales of 100 lb. nett.)
Ordinary assortment per lb. 48c.
Nos. 1 and 2 only per lb. 55c.
Nos. 3 and 4 only per lb. 40c.

CINNAMON CHIPS :—(in bags of 56 lb. nett. per candy of 560 lb.) R57·50

COCOA :—
Finest estate red unpicked per cwt R47·50
Medium do do do R37·50
Bright native unpicked and undried R35·00
Ordinary do do do R50·00

COCONUTS—(husked)
Selected per thousand R46·00
Ordinary " R36·00
Smalls " R30·00

COCONUT CAKE—
Poonac in robins f. o. b. per ton R75·00
Do in bags none.

COCONUT (Desiccated).
Assorted all grades per lb 16½c.

COCONUT OIL—
Dealers' Oil per cwt. R14·00
Coconut Oil in ordinary packages f. o. b. per ton R317·50.—Business Done.

COFFEE.—
Plantation Estate Parchment on the spot per bus.—R9·50.
Plantation Estate Coffee f. o. b. (ready) per cwt.—None
Native Coffee, f.o.b per cwt.—None.

CITRONELLA OIL—
Ready do per lb.—53c.

COPRA—
Boat Copra per candy of 560 lb. R46·00
Calpentyn Copra do do R46·00
Cart do do do R42·00
Estate do do do R46·00

CROTON SEED per cwt—R11·00

EBONY—
Sound per ton at Govt. depot R185—Sales of this day.
Inferior R100—Next sales on 25th May.

FIBRES—
Coconut Bristle No 1 per cwt R12·00
Do " 2 9·00
Do mattress " 1 2·75
Do " 2 1·85
Coir Yarn, Kogalla " 1 to 8 16·50
Do Colombo " 1 to 8 12·00
Kitool all sizes None
Palmyrah None

PEPPER—Black per lb None

PLUMBAGO—
Large lumps per ton R600·00
Ordinary lumps do R550·00
Chips do R350·00
Dust do R250·00
Do (Flying) do R125·00

SAPANWOOD— per ton R45·00—Nominal.

SATINWOOD (Sound) per cubic ft. R5·90—Sales of 26th Jan
Do (Inferior) per cubic ft. R4·40— do
Do (Flowered) per cubic ft. R10·70— do

TEA—	High Grown Average cts	Medium Average cts	Low Grown Average cts
Broken Pekoe and Broken Orange Pekoe per lb	60	44	38
Orange Pekoe do	52	41	37
Pekoe do	48	38	36
Pekoe, Souchong do	42	34	33
Pekoe Fannings do	35	34	32
Broken mixed—dust, &c	32	31	31

CEYLON EXPORTS AND DISTRIBUTION FOR SEASONS 1902 AND 1903

COUNTRIES	Black Tea 1903 lbs.	Black Tea 1902 lbs.	Green Tea 1903 lbs.	Green Tea 1902 lbs.	Coffee—cwts. Plantation	Coffee—cwts. N'tive	Coffee—cwts. Total	Cocoa cwts.	Cardamoms lbs.	Cinnamon Bales lbs.	Cinnamon Chips lbs.	Coconut Oil 1903 cwts.	Coconut Oil 1902 cwts.	Copra cwts.	Desiccated Coconut lbs.	Poonac cwts.	Coconuts No.	Plumbago 1903 cwts	Plumbago 1902 cwts.
To U K.	28682810	29936840	249216	110990	2249	..	2249	20520	160859	110632	311516	98199	49476	7902	4622991	997	2215503	30608	67378
" Austria	12553	7148	...	...	...	..	..	105	..	50	43012	12379	1701	4300	11050	...	12775	...	...
" Belgium	39056	25626	...	..	2	...	2	289	1000	68130	147336	3340	900	3393	81267	33095	92000	6341	4300
" France	132931	84872	4450	...	...	—	..	381	...	3600	29400	6614	...	22903	29420	...	..	1321	...
" Germany	174950	129143	..	...	...	..	..	2176	20665	144663	298547	2160	2336	65013	175130	31091	390865	20150	15600
" Holland	160	3190	..	..	...	..	..	...	...	3500	16800	614	...	...	54039	..	..	102	293
" Italy	9153	4590	...	..	...	..	...	...	...	27300	47600	3736	1014	...	..	..	4745	...	...
" Russia	1818411	2013820	10411	24210	..	...	..	...	...	..	..	...	...	26566	—	..	..	112	1218
" Spain	800	1750	..	..	...	..	...	156	..	84600	14000	..	...	...	18150	..	...	...	..
" Sweden	33050	14748	..	...	...	..	..	..	...	..	..	624	...	...	34400	..	...	..	...
" Turkey	7895	12813	..	...	..	..	..	...	..	500	...	..	...	..	...	...	..	..	...
" India	195009	219647	305	9780	10	..	10	...	50096	100	..	4008	18905	...	...	..	35100	1443	1582
" Australia	5727094	405342		...	814	20	834	197	...	2100	12320	55		..	238433	...	..	288	89
" America	1748796	1369866	1293773	222685	62	...	62	653	...	160023	32400	23708	14365	...	231918	...	.	73173	88506
" Africa	123168	170588	..	...	4	.	4	..	2078	...	..	219	60	-	24765	2001	626440	..	...
" China	1600093	756716	..	..	13	...	13	..	4766	...	..	1530	...	..	-	..	..	503	637
" Singapore	34439	37790	...	..	...	..	..	1669	1523	...	..	1409	..	..	..	...	..	...	..
" Mauritius	10932	26860	...	..	..	..	...	..	..	..	..	--	...	..	..	...	...	..	..
" Malta	87414	111000	..	..	..	...	..	...	..	...	..	..	..	..	...	..	...	...	..
Total export from 1st Jan. to 27th Apr, 1903.	42448074	39876289	1558140 †	367665	3154	20	3174	26146	241877	605193	952931	158595	88957	132697	5521551	67184	3279023	134041	179513

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From Lewis & Peat's Fortnightly Price Current, London, 8th April, 1903.

	QUALITY.	QUOTATIONS.
ALOES, Soccotrine cwt.	Fair to fine dry ..	70s a 80s
Zanzibar & Hepatic ,,	Common to good ..	20s a 60s
ARROWROOT (Natal) lb.	Fair to fine ..	7d a 8d
BEES' WAX, cwt.		
Zanzibar Yellow ,,	Slightly drossy to fair	£6 10s a £6 17s 6d
Bombay ,,	Fair genuine ...	£5 10s a £6 10s
Madagascar ,,	Dark to good palish	£6 7s 6d a £7 2s 6d
CAMPHOR, Formosa ,,	Crude and semi-refined	160s a 175s
Japan ,,	Fair average quality ..	170s
CARDAMOMS, Malabar lb	Clipped, bold, bright, fine	1s 6d a 1s 9d
	Middling, stalky & lean	1s a 1s 2d
Ceylon.-Mysore ,,	Fair to fine plump ..	1s a 3s [illegible]d
	Seeds ..	1s 2d a 1s 5d
,, Tellicherry ,,	Good to fine ..	1s 6d a 2s
	Brownish ..	1s 3d a 1s 6d
,, Long ,,	Shelly to good ..	9d a 2s
,, Mangalore ,,	Med brown to fair bold	2s 8d a 2s 11d
CASTOR OIL, Calcutta ,,	1sts and 2nds ..	2d a 2¼d
CHILLIES, Zanzibar cwt.	Dull to fine bright ...	31s a 40s
CINCHONA BARK.- lb.	Ledgeriana Orig. Stem	6d a 9d
Ceylon	Crown, Renewed	5d a 7d
	Org. Stem	2½d a 6½d
	Red Org. Stem	2½d a 4½d
	Renewed	3d a 5¾d
	Root	3¾d a 4d
CINNAMON, Ceylon 1sts per lb	Ordinary to fine quill	8½d a 1s 6d
2nds	,, ,,	8d a 1s 6d
3rds	,, ,,	7½d a 1s 4d
4ths	,, ,,	7d a 11d
Chips	,, ,,	2½d a 10d
CLOVES, Penang lb.	Dull to fine bright bold	6d a 1s
Amboyna ..	Dull to fine	5d a 6d
Zanzibar and Pemba	Good and fine bright	3⅞d a 4d
	Common dull to fair	3⅝d a 3 13-16d
Stems ..	Fair	2d
COFFEE		
Ceylon Plantation ,,	Bold to fine bold colory	90s a 115s
	Middling to fine mid ..	70s a 100s
	Smalls	59s a 62s
Native	Good ordinary	40s a 50s
Liberian ,,	Small to bold	30s a 40s
COCOA, Ceylon ,,	Bold to fine bold	66s a 68s 6d
	Medium and fair	58s a 64s
	Native	50s a 57s
COLOMBO ROOT ,,	Middling to good	8s a 14s
COIR ROPE, Ceylon ton		—
Cochin ,,	Ordinary to fair ..	—
FIBRE, Brush ,,	Ord. to fine long straight	—
Cochin ,,	Ordinary to good clean	—
Stuffing ,,	Common to fine	—
COIR YARN, Ceylon ,,	Common to superior	—
Cochin ,,	,, ,, very fine	—
do. ,,	Roping, fair to good	—
CROTON SEEDS, sift. cwt.	Dull to fair	15s a 25s
CUTCH ,, ,,	Fair to fine dry	25s a 30s
GINGER, Bengal, rough ,,	Fair	40s
Calicut, Cut A ,,	Good to fine bold	80s a 85s
B & C ,,	Small and medium	46s a 60s
Cochin Rough ,,	Common to fine bold	35s a 40s
	Small and D's	32s a 34s
Japan ,,	Unsplit	31s
GUM AMMONIACUM ,,	Sm. blocky to fine clean	10s a 35s
ANIMI, Zanzibar ,,	Picked fr. fine pl. in sts.	£10 a £13
	Part yellow and mixed	£7 a £10
	Bean and Pea size ditto	75s a £9
	Amber and dk. red bold	£5 15s a £7 10s
	Med. & bold glassy sorts	95s a £6 15s
Madagascar,	Fair to good palish ...	£4 a £8
	,, ,, red ...	£4 5s a £7 10s
ARABIC E. I. & Aden ,,	Ordinary to good pale	2[illegible]s 6d a 30s
Turkey sorts ,,		27s 6d a 32s 6d
Ghatti ,,	Pickings to fine pale ...	12s a 25s
Kurrachee ,,	Good and fine pale ...	25s a 27s 6d
	Reddish to pale selected	[illegible]0s a 23s
Madras ,,	Dark to fine pale ..	15s a 20s
ASSAFOETIDA ,,	Clean fr. to gd. almonds	[illegible]0s a 10[illegible]s
	Ord. stony and blocky	5s a 45s
KINO ,,	Fair to fine bright	4d a 5d
MYRRH, picked ,,	Fair to fine pale	75s a 120s
Aden sorts ,,	Middling to good	65s a 95s
OLIBANUM, drop ,,	Good to fine white	48s a 50s
	Middling to fair	30s a 42s 6d
pickings ,,	Low to good pale	26s a 3[illegible]s
siftings ,,	Slightly foul to fine	18s a 23s
INDIARUBBER, Ceylon	Fine (grwn. fr. Para seed)	2s 8d a 4s 2¼d
Assam	Good to fine	2s a 3s
	Common to foul & mxd.	7d a 1s 9d
Rangoon	Fair to good clean ...	2s a 3s
Borneo	Common to fine	6d a 2s 6d

	QUALITY.	QUOTATIONS
INDIARUBBER (Contd.)		
Java, Sing. & Penang lb.	Foul to good clean ...	8d a 3s
Mozambique ,,	Good to fine Ball ...	2s 6d a 3s 7d
	Ordinary to fair Ball ...	2s a 2s 4d
	Low sandy Ball ...	9d a 2s
	Sausage, fair to good ..	[illegible]s 2d a 3s 6d
	Liver and Livery Ball ..	1s 9d a 2s 10d
Nyassaland	Fair to fine ball ..	2s 3d a 3s 5d
Madagascar	Fr to fine pinky & white	2s a 2s 9¼d
	Fair to good black ..	1s 1d a 2s 4d
	Niggers, low to fine ..	7d a 2s 2¼d
INDIGO, E.I	Bengal--	
	Shipping mid to gd violet	3s 8d a 4s
	Consuming mid. to gd.	3s 2d a 3s 7d
	Ordinary to mid.	2s 10d a 3s 1d
	Mid. to good Kurpah	1s 9d a 2s 3d
	Low to ordinary	1s a 1s 7d
	Mid. to good Madras	1s 4d a 1s 10d
MACE, Bombay & Penang	Pale reddish to fine	3s a 3s 6d
per lb.	Ordinary to fair	2s a 2s 9d
	Pickings	1s 9d a 1s 11d
MYRABOLANS, cwt	Dark to fine pale UG	5s a 6s nom
Madras	Fair Coast	4s 3d a 4s 6d
Bombay ,,	Jubblepore	4s a 5s 6d
	Bhimlies	4s a 7s 6d
	Rhajpore, &c.	3s 6d a 5s 6d
Bengal ,,	Calcutta	3s 6d a 5s nom,
NUTMEGS— lb.	64's to 57's	3s
Bombay & Penang ,,	110's to 65's	11½d a 2s 10d
	160's to 115's	6d a 11d
NUTS, ARECA cwt.	Ordinary to fair fresh	14s a 18s
NUX VOMICA, Bombay	Ordinary to middling	5s 6d a 6s
per cwt. Madras	Fair to good bold fresh	7s a 10s
	Small ordinary and fair	5s a 6s 9d
OIL OF ANISEED ,,	Fair merchantable	4s
CASSIA ,,	According to analysis	2s 2d a 3s
LEMONGRASS ,,	Good flavour & colour	5d a 5½d
NUTMEG ,,	Dingy to white	1¼d a 2½d
CINNAMON ,,	Ordinary to fair sweet	3¼d a 1s
CITRONELLE ,,	Bright & good flavour	9d a 10½d
ORCHELLA WEED—cwt		
Ceylon ,,	Mid. to fine not woody..	10s a 12s 6d
Zanzibar. ,,	Picked clean flat leaf ..	10s a 14s
	,, wiry Mozambique	[illegible]0s a 11s
PEPPER - (Black) lb.		
Alleppee & Tellicherry	Fair to bold heavy ...	5⅞d a 6⅛d
Singapore ...	Fair	5⅝d a 5 15-16d
Acheen & W. C. Penang	Dull to fine	5⅛d a 5⅝d
PLUMBAGO, lump cwt.	Fair to fine bright bold	30s a 35s
	Middling to good small	20s a 28s
chips	Dull to fine bright ..	9s a 15s
dust	Ordinary to fine bright	4s a 7s 6d
SAFFLOWER	Good to fine pinky .	65s a 75s
	Inferior to fair .	40s a 60s
SANDAL WOOD—		
Bombay, Logs ton.	Fair to fine flavour ..	£15 a £30
Chips ,,	... ...	£5 a £8
Madras, Logs ,,	Fair to good flavour ..	£15 a £30
Chips ,,	Inferior to fine ...	£4 a £8
SAPANWOOD Ceylon ,,	Fair to good ..	—
Manila ,,	Rough & rooty to good	—
Siam ,,	bold smooth...	—
SEEDLAC cwt.	Ordinary to gd. soluble	115s a 120s
SENNA, Tinnevelly lb.	Good to fine bold green	5¼d a 8d
	Fair greenish	3¼d a 5¼d
	Common dark and small	1¼d a 3d
SHELLS, M. o'PEARL—		
Bombay cwt.	Bold and A's	
	D's and B's	30s a 140s
	Small ...	
Mergui ,,	Small to bold ..	£8 2s 6d a £12 15
Mussel ,,	Small to bold ...	17s a 55s
TAMARINDS, Calcutta...	Mid. to fine bl'k not stony	8s a 10s
per cwt. Madras	Stony and inferior ..	4s 6d a 6s
TORTOISESHELL—		
Zanzibar & Bombay lb.	Small to bold dark mottle part heavy	15s a 2[illegible]s 6d
TURMERIC, Bengal cwt.	Fair ...	11s a 13s
Madras ,,	Finger fair to fine bold bright	9s a 13s
Do. ,,	Bulbs ..	9s
Cochin ,,	Finger .	9s 6d a 10s 6d
	Bulbs ..	9s a 9s 6d
VANILLOES— lb.		
Mauritius ... 1sts	Gd. crysallized 3½ a 8½ in	7s 6d a 26s
Bourbon ... 2nds	Foxy & reddish 3½ a 8 ,,	[illegible]s a 16s
Seychelles 3rds	Lean and inferior ...	5s 6d a 8s 6d
VERMILION lb.	Fine, pure, bright ...	3s a 3s 1d
WAX, Japan, squares cwt	Good white hard ...	70s

THE

Agricultural Magazine.

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for May :—

Vol. XIV.] MAY, 1903. [No. 11.

THE CHANGING OF THE SEX IN PLANTS.

THE *Journal d' Agriculture Tropicale* avers that the inhabitants of the Southern oases in Algeria claim the ability to change the sex of date palms. Of 100 date palms 80 are male trees, hence it may readily be conceived that it is greatly to man's interest that the cultivator's intervention should be crowned with success. The method consists of tearing off all the leaves from the foot-stalks at two or three years of age, so that the medial nerve is split in two from the centre to the leaf sheaf. The idea of the Arabs is that this tearing process brings on a concentration of the sap movement in the same way as in the case of an annular incision, and results in an accumulation of sap, which is more necessary for the vital functions of the female plant than for those of the male. No objection, says the editor, from a vegetable pathological point of view, can be raised against the above assertion, for the reason that in young plants the organs are not yet different from each other.

In our experience, the topping—or cutting of the terminal bud—of "male" papaw trees (*Carica Papaya*) as soon as the character of the flower is ascertainable, results in altering that character and inducing them to yield good fruit in lieu of the wretched specimens borne by the so-called male tree.

In this case as with the date palms there is no doubt that the drastic treatment adopted results in what is referred to in the *Journal d' Agriculture Tropicale* as a "concentration of the sap."

In the Papaw the weakly nature of the male tree is characteristic, and the sex could almost be anticipated before blossoming. Whether any such distinctive physical character is observable in the date palm we cannot say, but it is more than likely there is. By cutting back, therefore, it is reasonable to suppose that the sudden checking of the upward flow of sap to meet the demands of the new growths in the region of the terminial bud, brings about a turgid condition of the cells and a corresponding concentrated or vigorous condition of the cell-sap, which is thus enabled to develope the fruit-bearing organs of the flower.

In a "male" or staminate flower, we must of course assume that the pistillate part of it is only suppressed and capable of developement under extraordinary conditions. Suppression is defined in botanical text-books as the absence of parts in a flower, which, from analogy, we might expect to find. The correctness of this view is proved by the fact that we often find an imperfect or partial developement of organs that should be present under ordinary circumstances. To such partial developement of the pistil must be attributed the production of imperfect fruit on the so-called male papaw tree. And that the further developement of organs, which have a tendency to suppression, is possible by artificial means, is further proved by the fact referred to above, namely, that the cutting back of the plant in the male papaw results in the production of pistillate flowers. It will be found in actual practice that one cutting back does not always bring about the desired result, and that the tree has to be attacked more than once before the tendency to suppression of the female organ is overcome.

The ingenuity of the skilled gardener has produced marvellous results in floriculture, not merely in the development or supression of organs, but also in the multiplication of the parts of flowers, the increase of the number of one series with the corresponding decrease or suppression of another. With the possibility of such results, the apparent marvel of changing the sex of flowers loses its marvellous character. For change of sex would be nothing more than the developement or suppression of the stamens or pistil, resulting in the production of male, female or hermaphrodite flowers. The sexual character of the flower would thus appear to be, to some extent at least, controllable, and dependent on the influence of external forces.

OCCASIONAL NOTES.

Many people complain of the great difficulty in raising vegetables by the sea-side. That such difficulties exist it cannot be denied, but there are crops that will thrive, and thrive well for the greater part of the year, quite near to the sea. What is wanted is experience and that can only be gained by trials of different varieties. It would appear that cucurbits are not unfavourably affected by proximity to the sea, and Luffa grows particularly luxuriantly in such situations.

A contributor to the *Agricultural Gazette* of N. S. W. writing on *Paspalum dilatatum*, which he says "is now so much grown everywhere," refers to its reputation as "hard to germinate," and explains this by stating that it produces very little good seed, the percentage of fertile seed being very low, only ½ to 2 per cent. It is surmised that the seed is greatly affected by external conditions, or perhaps like some other known grasses, only few seeds are produced, and of these only a small percentage fertile. For propagation, therefore, the writer concludes that "without doubt, division of the roots remain the best method." In our own experience propagation by seed is very difficult, but, with root division, there is little difficulty in establishing this grass which may be seen growing in the Government Stock Garden in Colombo.

A very common plant in Dumbara, growing with the grass and sticking close to the ground, with outspread leaves, is the "et-adi" or elephant foot, so called no doubt owing to some remote resemblance to the print of the mammoth foot. In spite of very dry weather it seems well able to hold its own amid the short dry grass, eaten down by cattle and scorched by the sun, but itself apparently untouched. Botanically the plant is *Elephantopus scaber*, belonging to the order Compositae.

The generic name *Elephantopus* is Linnæus' translation of the native name *et-adi* (Sinhalese) and *Anichovadi* (Tamil), both meaning "elephant's footprint," and, like *melastoma* (black mouth) embodies an attribute of the plant as noted by the native observer. Trimen says of this plant, "One of the commonest weeds in turf, and owing to its long roots, difficult to eradicate. The leaves are used as an external application."

Enquiry has been made for *Equisetum debile* as a material for making a cooling drink. The plant is described by Watt as "a vascular cryptogam with creeping rhizomes and fluted stems," and is said to be used in India as a cooling medicine and for gonorrhoea. Though found upcountry we doubt if it could be got in sufficient quantity to meet a large demand. We have, however, supplied samples to be sent to Germany from whence the enquiry came.

Mr. A. Despeissis, writing on Tropical Fruit to to the Journal of the Department of Agriculture of Western Australia, says that the weight of the breadfruit goes up to 30 lb. This is a stupendous weight for the breadfruit and will astonish readers in Ceylon, where the breadfruit grows so well. On the other hand the smooth Cayenne (Giant Kew) pine is said to weigh from 6 to 10 lbs., whereas a weight of 20 lbs. (the record we should say) has been reached in Henaratgoda Gardens, while in Matale (as noted in our last issue) Dr. VanRoyen has succeeded in raising pines weighing 16 lbs. and over.

Mr. G. S. Sykes writing to the *Indian Agriculturist* speaks of "banana meal or flour prepared from the ripe banana fruit." Surely this is a mistake? Banana meal or flour, as we know it and prepare it, is made from the *unripe* but "hard" fruit.

RAINFALL TAKEN AT THE GOVERNMENT STOCK GARDEN FOR APRIL, 1903.

1	Wednesday ...	Nil	17	Friday ..	Nil
2	Thursday ...	Nil	18	Saturday ...	Nil
3	Friday ...	Nil	19	Sunday ..	Nil
4	Saturday ...	·35	20	Monday ...	Nil
5	Sunday ...	·06	21	Tuesday ...	·03
6	Monday ...	·06	22	Wednesday...	·81
7	Tuesday ...	2·15	23	Thursday ...	·11
8	Wednesday ...	Nil	24	Friday ...	Nil
9	Thursday ...	·24	25	Saturday ...	Nil
10	Friday ...	Nil	26	Sunday ...	Nil
11	Saturday ...	·71	27	Monday ..	·17
12	Sunday ...	1·23	28	Tuesday ...	Nil
13	Monday ...	·10	29	Wednesday...	Nil
14	Tuesday ...	·01	30	Thursday ...	·92
15	Wednesday ...	·03	1	Friday ...	·07
16	Thursday ...	·05			

Total in....6·60

Mean in...·22

The greatest amount of rainfall in any 24 hours, on 7th April, 1903, 2·15 inches.

ALEX. PERERA.

THE DEVELOPMENT OF VILLAGE INDUSTRIES.

No policy for the improvement of the condition of the villager in Ceylon will be complete unless attention is paid to the development of minor industries. Our villager in the majority of cases is a land owner, and he can never be induced to leave his ancestral holdings. But these ancestral lands are gradually being alienated in many places, and in these instances the land is being so sub-divided as to leave barely a sufficient area for a man to support himself by agricultural labour. One result of the reduction of the extent of land held by individuals will be an appreciation of improved methods of cultivation, for when a man finds that by better attention to tillage operations, manuring and selection of seed he is able to take as much out of a small plot as he did with larger areas of land under the old system, necessity compels him to pay some intelligent attention to the new methods which he looked to whith suspicion at one time. The School Garden system which was recently introduced in the Island should prove to be of great use at this juncture, and the development of the scheme will in time be welcomed by even the most conservative village *goyiya*.

The second requisite for the development of village industries is the freeing of the *goyiya* from the village money lender, at least in regard to what he actually requires in the cultivation of his lands. It has often been mentioned that a village cultivator has to pay a hundred per cent on the seed grain he obtains, hundred per cent on the manure, and an equally large percentage on any little money he raises to enable him to grow a crop. This is a very large waste, and a saving in this interest will increase his earnings to two or three times of what they are at present.

For example, a *goyiya* who owns in his own right an acre of paddy land, expends personal labour in its cultivation, but has to borrow the seed paddy, say 2½ bushels, for sowing his acre; he also borrows the bone meal say 56 lbs. After he reaps his crop in four or five months' time he has to return five bushels of paddy for the 2½ he borrowed and four bushels for the manure. His full crop may be anything below 20 bushels, and only 11 bushels are left for all his labour, including cattle for ploughing and thrashing. There is no reason why an Agricultural Banking system cannot be introduced in Ceylon, and that too with profit. We have the system now working successfully in such places as Egypt and the Deccan, where the conditions and the surroundings of the cultivator are decidedly more unfavourable for the development of such a system than in Ceylon. An Agricultural Bank will do more than allow the cultivator to obtain his seed and manure at reasonable rates, it will help in the speedy development of the tens of thousands of acres of land which are now being made available for cultivation under the new irrigation scheme. It is only the small landholder that can successfully cultivate irrigable lands. These cultivators with a little encouragement will take up every available acre of irrigable land. The encouragement they require is not much, and will in no way affect the public funds. They will not ask for bonuses, or free grants, or leases on favourable terms.

If we have an Agricultural Bank, and if a little money is lent out on favourable rates for cultivating the land, nothing more will be required to see all these lands profitably cultivated.

There are districts in Ceylon where a number of minor industries can be successfully started among the villagers, and it is here that some special attention should be given to the subject. The preparation of jams and preserves, the manufacture of various articles out of the different kinds of fibres, leaves and rushes so commonly met with here, reed, rattan and bamboo work; and various forms of ornamental work in wood are industries that will readily appeal to the villager. At present these products are put to use to a very small extent to meet immediate local demands; but to create regular and systemetic industries, with a steady demand for the articles turned out, some efforts have to be made to instruct and encourage the producers. There are a large number of wild fruit as well as easily-cultivated vegetable products that can be profitably used in making preserves. The villager will be prepared to give his labour very cheap in preparing preserves, if he only knew what is required, and if he is able to readily dispose of his produce. Woodapple, bael fruit, bilin, lovi-lovi, guava, rambutan, pineapple, Seville oranges and many other fruits now almost run to waste in places far from the chief towns. Fibre leaves and rushes are now put to use in certain localities in the preparation of mats, bags, and a few other articles; but these have only a very limited demand. People must be taught to turn out articles to suit modern requirements. Thousands of kinds of paying articles can be easily made out of these raw products, and the villager who can turn out a mat in complicated patterns, or a tray or a bag with ingenious devices can easily be taught to turn out anything that may be required in the market. The same applies in the case of rattan and bamboo work. The numberless articles prepared in Japan and the Straits in these materials can be turned out here, and can be made a profitable industry among the villagers. The same can be said of ornamental work and wood carving.

These are very simple matters, but if once systematically introduced will have far-reaching effects. There should be some practical training in industrial work in our village schools. The village schools need not be converted into so-called industrial schools where the pupils are taught to be labourers in mere mechanical trades such as smithing, shoemaking, tailoring and printing. Every village school boy should know something of form, colour and the properties of common objects; he should have some training in plaiting, weaving and modelling, in fact in the use of his hands; without this knowledge his learning will not be of much use to him. The art schools in India and Burmah are doing a great deal towards the improvement of minor industries similar to

those noted above. We have no art school, or a school of handicrafts in Ceylon. The Technical College only trains boys in the higher branches of engineering and mechanics which will undoubtedly help large manufacturing industries. But we have no manufacturing industries in Ceylon, neither is it likely that we will ever induce capitalists to open workshops and set up costly machinery for manufacturing, when the raw material required for such purposes is not forthcoming in any appreciable quantites. The Ceylon Technical College should open classes in the vernacular for teaching the properties of raw materials found in the Island, and the methods of utilizing them for making articles that are required in modern markets. It is only at such an institution that a collectonof suitable models can be made. The latest methods of food preserving, fruit packing and canning can be scientifically taught at this institution. The preparation and blending of colour, the manufacture of hundreds of varieties of useful articles out of fibre, leaves, rushes, rattan, reed and bamboo can be studied and systematically taught. The scientific staff attached to the institution will be capable of collecting information that will be of great value, they will be able to experiment on, and test local materials and find new raw materials for the use of the village worker, and eventually open up industries that will benefit a large number of people who are ready to work with their own hands.

W. A. D. S.

OCIMUM SP.

Considerable prominence has been given to the value of the different species of Ocimum by Mr. Shipley's article in *Nature* (January, 1902) which treats more especially of *O. viride* as a cure for mosquitoes. This particular variety does not occur in Ceylon, but the reputation of the plant as a mosquitofuge (to coin a new term) at once suggests the close connection between the plant in question and *O. sanctum*, known among the natives as madurutala or "the mosquito plant."

The testimony of Capt. Larymore, C.M.G., Resident, Kabba Province (Nigeria ?) is certainly very strong, when he avers that by placing 3 or 4 of the plants round his bed at night he was able to sleep unmolested without using a mosquito curtain ; and if we may assume that the experience was not a solitary one, and also that there were no other circumstances prevailing to which the absence of mosquitoes could have been attributed, then we must admit that a valuable discovery has been made for British East Africa. For ourselves we are inclined to think that *O. sanctum* would serve us quite as well as *O. viride*, and we would advise all mosquito-ridden ones to take the hint from the native, as Capt. Larymore has done in East Africa, and make use of madurutala, the mosquito plant of Ceylon, in the manner suggested.

Regarding *O. sanctum*, Trimen says, "The scent of the bruised leaves is faintly sourly (*sic*) aromatic ; they are used in medicine in cases of cough and catarrh," but he does not add, "also for keeping away mosquitoes—hence the native name."

Other species of Ocimum are : *O. canum* (Hin-tala), the leaves of which are pleasantly aromatic when bruised. *O. basilicum* (suvanda-tala), the "Sweet Baril," with a very sweet aromatic scent when bruised. *O. gratissimum* (gas-tala) and its variety *O. suave*, with faintly aromatic apple-like scent, and used in medicinal fumigations. Lastly *O. adscendens*.

The majority of tropical labiates are characterised by aromatic properties, such as species of Mentha, Coleus, Plectranthus, Pogostemon, &c. *Anisomeles ovata*, another member of this order, which possesses "a warm Camphoraceous scent" must, however, take the palm for keeping off noxious creatures, for we read that the smoke from this is believed by the natives of Ceylon to drive away not mosquitoes but demons!

SOME PROBLEMS OF THE RURAL SCHOOL.

(Continued from last issue.)

With the better organisation of the rural school will come very much wider opportunities for the enrichment of the courses of study by the introduction of subjects which are directly related to agricultural improvement and the inculcation of the love of country life in the minds of the young. All round the country school is a wealth of material for the most attractive and useful study which has been neglected for lack of knowledge and the absence of a teacher. The secrets of air, soil, plant and animal are coming to be common property, and science no longer mere classifying and anming. In the United States the enthusiastic and successful labours of such men as Professors Bailey and Roberts of Cornell University in formulating plans for nature study in the rural schools have borne much good fruit. Special efforts are now being made to secure the interest of teachers and parents,

The great obstacle to the spread of the movement to introduce nature study into the rural school, aside from the lack of competent teachers, is found in the conservation of the patrons of these schools. Reading, writing and arithmetic they know, but what, forsooth, is this new-fangled nature study? The subject is often so preseuted to their minds that it seems to them as if the new study must necessarily crowd out some of the old ones, or at least weaken the already too imperfect hold which the average pupil has on such fundamental things as spelling, writing, and arithmetic. But this need not be so. Instruction about plants and animals and insects may easily and naturally be connected with exercises in composition and in numbers, which will bring into practical use from day to day what the child is learning in his lessons about the English language, arithmetic, or geography. Properly taught, nature study will not crowd out any essential branch of learning from the common schools, but, on the other hand, it will stimulate interest in them all as the pupil discovers that they may be directly

related to his daily life and the world about him. Once the child's mind is awakened to the innumerable wonders of nature, and his interest excited in explanations of phenomena with which his farm life makes him familiar, it will be far easier than ever before to stimulate him to continuous endeavour to widen his knowledge through reading, as well as through observation. He will have more thoughts to put on paper, and he will often wish to draw objects he has seen.

The country boy often has a wonderful familiarity with nature—animals, birds and trees—which is of little value till it is broadened and deepened by being connected with facts and principles of which he has no knowledge.

The school is the place where we should learn to connect the practical and other knowledge we already have, with what other men knew who have lived in the past or in other places, or who have studied certain subjects very thoroughly.

What is wanted in our schools is to connect a child's limited knowledge of nature with what science has improved of nature's mysteries, so that life and work in the country may be improved thereby. If we have any such idea as that practice and science must remain apart, we must discard it at once. So far from being "divorced," they are joined as Dr. True forcibly puts it "in indissolubie wedlock." When the needs of the common schools are studied with unprejudiced minds, it will be seen that if they are to be brought into harmony with modern progress in horticulture, agriculture and other industries, they must be developed so as to bring them into direct touch with the land and its productiveness. The nature study movement promises to do this, and for this reason all those who have any concern with the cultivation of land should take an interest in it. True, nature study in the village school is only in its beginning, and much experience will have to be gained before we learn its just limitations and develope its proper service; but this can only be done through its actual working in the schools. Therefore, says Dr. True, open the common schools to instruction in nature, and make that instruction relate directly to the land. Insist also that normal schools and teachers' institutes prepare teachers for this line of work.

PLANTAIN FIBRE.

Hitherto the general impression has been that plantain fibre was only got from a particular species of *musa* which produces the fibre known as "manilla hemp," and hence no serious attempt was made to utilize the stems of the trees so long cultivated only for fruit.

Since of late, however, considerable interest has been aroused by the publication of reports on the value of the fibre to be got from the edible varieties of the plantain. Musa fibre, extracted from the outer sheath of the banana or plantain (call it what you will, for there is no real distinction) after the fruits have been cut, is reputed to be suitable for making "mats, coarse canvas, cords, hats, plaited work, raw fibre cables, ropes, twine, fine muslins, and fabrics 'half stuff' and paper of all kinds, lace, fine lace handkerchiefs, and cloth of a close texture and very durable."

In a contribution to the March number of the *Indian Agriculturist*, Mr. G. S. Sykes deals at length on this subject. It is needless for us to give a full summary of the article, but a description of the method of extracting the fibre will no doubt be acceptable to our readers, some of whom have, indeed, been making enquiries as to how this could be best done. According to Mr. Sykes the method of extracting the fibre is simplicity itself. The stem is cut down to the ground and each leaf is sliced of. The operator then sits on the ground with the end of the leaf stalk in his lap, makes an incision under the fibre at the end, and with a smart twitch rends off strips of the outer skin with adhering fibre, up to the whole length of the stalk. In this way ribbons of fibre are got, and in the same way the stem is also stripped into ribbons.

The contrivance for extracting the fibre consists of a small plank, to which is fixed a blunt iron knife that can be weighted, under which the strips are drawn three or four times, separating pulp and juice from the fibre. The exact amount of pressure to be applied must be learnt by practice. The knife must not be too sharp, but also not too blunt. From ordinary stems $1\frac{1}{2}$ to 2 lbs. of fibre should be obtained, but from $2\frac{1}{2}$ to 3 lbs. could be got from large stems when the whole length as well as the petioles are used. It is estimated that one man can produce 50 lbs. of fibre per day. The fibre should be at once thoroughly dried in the sun to preserve colour and quality. Carefully prepared fibre is said to be worth from £25 to £30 per ton in London, while the entire cost of placing it on the market should not exceed £10 per ton.

This is certainly very encouraging to those who are in a position to embark on the new industry.

HOUSEHOLD HINTS.

Arrowroot Biscuits.—1 lb. of butter, 1 lb. sugar, 1 lb. arrowroot (or corn flour), 1 lb. flour, two eggs. First beat well together the butter, sugar, and yolks of the eggs till it is like cream, then add the white of the eggs which have been beaten to a stiff froth, then add slowly the flour and arrowroot, mix well, and roll out on a board till the required thickness is got. Then bake.

Arrowroot Cake (Bermuda Cake).—Take 4 oz. each of butter, arrowroot, and sugar, two eggs, and the rind of half a lemon. First beat the butter to a cream; beat the yolks and white of eggs separately for ten minutes. Next add the sugar and flour rubbed through a sieve and the grated lemon peel. Beat all together for twenty minutes, grease a flat tin, line with butter paper, pour in the above mixture, decorate it with almonds, and bake in a quick oven. Turn on to a sieve to cool, and cut in squares. Sift sugar over and serve.

BANANA COMPOTE.—Pare thinly a lemon and squeeze the juice. Put both into a basin and leave for about an hour. Place a teacupful of cold water in an enamel saucepan, add to it a teacupful of sugar, and boil; when boiling strain into it the lemon juice. Pare 4 or 5 bananas, removing all fibre, and cut in half lengthwise, and then divide each half into three pieces, cook a few at a time in the syrup till transparent. When all are done, let the syrup get cool and then strain over the fruit.

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Mildew stains may easily be removed by wetting and soaping the spot, covering it with powdered chalk, and then putting it in the sun to bleach. Damp it from time to time as it dries, and then wash it in the usual manner with soap and water. If necessary, repeat the process.

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Alum purifies water in a remarkable degree. Four gallons of water may be purified by stirring into it a teaspoonful of powdered alum. Allow it to settle for a few hours, when all the impurities will be found to have sunk to the bottom of the vessel, leaving the water fresh and clear.

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Wash vessels which have contained milk in cold water first, and afterwards scour them with hot water and soda. The use of cold water first insures greater cleanliness, for plunging at once into hot water is apt to set the milk and cause it to hang about the cans and pans to the detirment of the milk which is afterwards placed in it.

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Cold water is said to be efficacious in removing a tight stopper. The bottle must be thoroughly immersed in plenty of cold water and allowed to remain in the latter all night. On removal it will be found that the stopper, after being carefully wiped all round, will come out without any difficulty. A small amount of vaseline rubbed on it will prevent any recurrence of the trouble.

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To make liquid glue which will last for years put some pieces of glue into a bottle with some whisky. Cork tightly, and set aside till the glue has dissolved. This should be ready for use without heating, but in very cold weather the bottle may be stood in hot water for a few minutes before using the glue.

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If you have not a night light, take an ordinary candle and put finely powdered salt round the wick up to the black part. A candle thus treated will burn very slowly, and give the dull light which is so often desirable in a sick room at night.

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As a cough mixture for children the following recipe is unsurpassed:—Liquified honey, ½ oz., lemon juice, 1 oz. Another mixture for strengthening the voice, as well as for curing a tickling cough, is:—Glycerine, ½ oz.; fresh lemon juice, 1 oz., whisky, one teaspoonful. A quarter of a teaspoonful taken every fifteen minutes when the cough is troublesome will soon relieve it.

The odour of onions, either on the hands or on pots and pans, is easily removed by washing with ground mustard mixed with a little water. Linseed meal will answer the same purpose.

MARTHA.

PRINCIPLES OF NUTRITION AND NUTRITIVE VALUE OF FOOD.

(*Continued.*)

It is unnecessary, for the purposes of the ordinary reader, to give a description of the complex apparatus for ascertaining the functions and nutritive value of food, but it is sufficient to know that with such apparatus it is possible to learn what effect different conditions of nourishment will have on the human body. The methods and apparatus are very costly in time and money, but the results are proportionately more valuable than those from simpler experiments.

To summarise what has already been said: Food as purchased consists of an edible part (flesh of meat, yolk and white of egg, flour of wheat, etc.) and refuses (bones, shells, bran, etc.). The edible portion consists of water and nutrients (Protein, fats, carbohydrates and mineral matter). Protein (white of egg, curd of milk, lean of meat, gluten of wheat, etc.) goes to form tissue. Fats (fats of meat, butter, olive oil, etc.) are stored as fat. Carbohydrates (sugar, starch, etc.) are transformed into fat. All these three (Protein, fats, and carbohydrates) serve also as fuel to yield energy in the form of heat and muscular power. Lastly, mineral matter or ash (phosphate of lime, potash, etc.) takes part in the formation of bone, assists in digestion, etc. In view of the above functions, food may be defined as that which, taken into the body, builds tissue or yields energy. The most healthful food is that which is best fitted to the needs of the consumer. The cheapest food is that which yields the most nutriment at the least cost. The best food is that which is most healthful and cheapest.

The value of food for nutriment depends mainly on its composition and digestibility. Composition is determined by chemical analysis. In studying a table showing the composition of foods, one of the first things to be observed is the differences in the proportion of non-nutrients (refuse and water). Meat, fish, fruits, etc., as purchased, contain a good deal of refuse, which necessarily lessens the proportion of nutrients, while such refuse is usually absent in dairy products, cereal stuffs, and foods prepared from the latter (bread, cakes, etc.) In the edible portion the proportion of water present effects nutritive value. Water forms from 40 to 50 % of the ordinary kinds of meat, and is abundant in lean flesh, tending to decrease as fat increases and *vice versa*. In fresh fish water is more abundant than in meats. Fresh vegetables and fruit contain as much as 80 and 90 % or more, while dried seed and flour prepared from them contain roughly from 10 to 12 % only. Many cooked foods, of course, contain more water (added during cooking) than the raw materials. Soups are often little more than coloured and flavoured water, and are hence of extremely low

nutritive value. In some cooked food, on the other hand, notably baked, roasted, and fried meats, little water is present as the proportion has been diminished by the process of cooking.

The most important of the actual nutrients is protein. As stated it is most abundant in meat, fish, eggs, cheese, and dry legumes (beans, peas, etc.) The proportion of protein varies with the kind of meat and fish. In beef, veal and mutton it forms between 14 and 26 % of the edible portion. It is generally less in fish, because the latter is more watery than meat. The fatter the meat, the less is the protein. Lean pork has less than beef and mutton; fat pork almost none. In cheese there is from 18 to 38 %, in dried beans from 18 to 25 %. In cereals there is from 7 to 15 %, being most abundant in oats; wheat flour has about 11 %, and bread about 9 %. Fresh vegetables and fruits contain almost none, seldom if ever over 5 and often only 1 % or less. Fat is derived as a rule from animal foods, but some fat also from vegetable foods. In meat it varies from less than 10 in some cuts of beef and veal to 40 % and over in a side of pork, and over 80 % in fat salt pork. Lean fish like cod contain almost none, but in salmon it goes up to 10 and even 15 %. The chemical composite of salmon is indeed not unlike that of lean meat. Milk contains about 4 % fat; butter is practically pure fat, and full milk cheese may contain from 25 to 40 % according to the richness of the milk or cream.

With the exception of oatmeal, which contains about 7 %, there is little fat in cereals as sold, or in dried legumes, and it is practically wanting in green vegetables and most fruits. Oil seeds (like olive, cotton) are of course rich in fat. Edible nuts also contain a considerable amount.

Carbohydrates are almost entirely absent in animal foods, except milk, but forms the chief nutrient in vegetables. They make up from 70 to 80 %, of cereals, 60 to 70 of dry legumes, and the bulk of the nutrients of fresh vegetables and fruits, as of sugar, honey, etc.

Mineral matters occur in all ordinary foods. Fresh meat and fish contain about 1 %. and milk contains 7 %. In cereals the amount varies from ·3 to over 2 %, but in green vegetables and fruits it is usually less than 1 %. Dry legumes contain from 3 to 4 %.

In short, meat, fish, eggs, milk, fresh vegetables and fruits contain most refuse and water. Protein is most abundant in animal foods and legumes, and also in cereals. Fats occur chiefly in animal food. Carbohydrates are found almost exclusively in vegetable products and milk. Mineral matter in small proportion is found in all foods. The fuel value varies within wide limits, being greatest in those materials which contain the most fat and least water.

(To be continued.)

GENERAL ITEMS.

The United States Consul at Gothenburg, in a recent report to his Government, says that Dr. Ekenberg, of that city, has made a discovery which will be of importance to dairy farming. He claims to have invented an apparatus by which milk can be brought into the form of powder, like flour in appearance, but possessing all the qualities of milk in concentrated form, moisture excepted. It is said that this milk flour is completely soluble in water, and can be used for all purposes for which common milk is employed. The milk flour does not get sour, does not ferment, and in the dry state is not sensitive to changes in the weather. It can be kept and transported in tin cans, barrels, bags, etc. The cost of production is estimated at about 27 cents per 106 quarts, and flour made from skimmed milk can be sold for about 13 cents per lb. At a recent meeting of the Academy of Agriculture, Dr. Ekenberg exhibited samples of the milk flour which received favourable comments. It is considered that the invention will be of the greatest importance for the utilisation of skimmed milk, which heretofore has largely been wasted, but in the dry form it can be transported without losing any of its original qualities. The product mentioned is considered superior to the casein products "proton" and "proteide," now manufactured from milk by the aid of rennet, acid, or lye.—*Natal Agricultural Journal.*

As an instance of the tenacity of life in timber trees, we quote from the same Journal, the reference to the Kaffir plum (*Odina caffra*) regarding which a correspondent writes:—"The tree was cut in the beginning of March about 4 ft. from the ground. It was at once cleared of all branches, and cut in halves, each piece measuring 15 ft. in length and the diameter 2 ft. with very little tapering, if any. I had it taken outside the boundary of the forest at once. A trader bought it, but left it lying till September, when he dragged it to his house. He roughly squared one side of each piece, cut off 6 ft. from each end, and bored two holes right through for driving in the hinges, as he intended these lengths for gate posts. He eventually put them in 3 ft. deep holes on the 25th September, and hung his gates on them. About three or four months later each of these gate posts had developed fine strong branches all around, even on the squared side. For about 7 months this tree had been exposed to heat and cold, cut in pieces, and yet when only roughly put in holes, stone and earth stamped round, it became a lovely tree or, rather, two lovely trees. Out of the remaining 6 ft. from each piece of timber the trader made the top of a table, and I have never seen any wood take a more beautiful polish; the grain is fine and close." Common local forests give us an instance of a similar character?

The following is a note on Guinea grass (*Panicum Maximum*) from a report on grass experiments made to the Director of Agriculture, Natal:—"This grew well and attained to a height of over 4 feet between spring and the end of autumn.......It is an exceedingly coarse grass, and I do not think stock would care for it. It might be useful for hay or ensilage, but I fancy

many of our indigenous "land grasses" are superior to it in every respect." This latter statement may be correct, but all the same Guinea grass has proved to be an excellent fodder grass for stall feeding, and it is highly valued both in India and Ceylon. If not cut at the proper time it will of course be found to be coarse.

Collar rot (*mal di goma*), or gumming in lemon trees, is a disease primarily due to defective drainage and smothering of the root-system with rich manures. The first symptoms are exudations of gum from the stem, then the foliage gradually becomes yellow; finally the leaves drop, and there is a profusion of bloom. In the first stages, the disease can be successfully treated by cutting away with a sharp knife all the diseased bark and sap wood. As a rule, this will be found to extend an inch or two below the surface of the soil. When there is nothing but sound bark and wood left, smear the surface with a mixture of Stockholm tar two parts and carbolic acid one part. If it happens that the disease is so far advanced that the stem is entirely girdled with decayed bark and sap wood, it is better to remove the tree, and carefully dress the ground with a heavy sprinkling of lime. By removing the earth from about the base of the tree, and applying 2 or 3 lb. of slaked lime, the disease can in some measure be arrested. The annual whitewashing of the trunks of lemon-trees is also a good check; but nothing can effectually prevent the disease if the drainage is bad, or the trees are overdosed with manures rich in organic matter.

Lysol is one of the most useful disinfectants we have. A solution of half per cent when used for wounds induces rapid healing and prevents suppuration. Lysol has also been successfully used for dressing badly-affected hoofs in horses, for destroying animal parasites and grubs attacking cultivated plants, for keeping off flies and insects such as ticks, fleas, and in numerous other ways.

What is nicotine? When pure it is a colourless fluid of somewhat oily consistency and a strong, peculiar, penetrating odour; but it darkens on exposure to the air and light, becoming first yellow and then brown, so that it looks in this darkened condition something like the tarry matter that soils or smother's fingers, or the substance that is deposited in the stem of a pipe. But this tarry deposit has nothing essential in common with nicotine, and contains but traces of this alkaloid when any at all. A part, but only a small part (about ⅐ in the experiments by Melsur) of the real nicotine of tobacco is volatilized without decomposition, the remainder being burnt and destroyed in the process of smoking. The brown oily substance which is so troublesome to pipe smokers is really the tar produced by the action of heat on the woody fibre of the leaf. So says Prof. Mallett of Virginia University.

Equal parts of white lead and castor oil mixed near the fire into an ointment are highly recommended by a correspondent to the *Queensland Agricultural Journal* as a cure for long standing and itching sores as well as for eczema. Spread the ointment on linen and renew morning and evening. Every day give a good washing with coal tar soap and rub well with a towel.

To induce sweet potato vines to set, twist the vines in a heap on the top, when potatoes will begin to form.